EFFECTIVENESS OF HONEY IN REDUCING UPPER RESPIRATORY TRACT INFECTION AMONG CHILDREN UNDER THE AGE GROUP OF TWO TO FIVE YEARS IN KURUMBANAI VILLAGE AT KANYAKUMARI DISTRICT.

DISSERTATION SUBMITTED TO

THE TAMILNADU DR.M.G.R.MEDICAL UNIVERSITY

CHENNAI

IN PARTIAL FULFILLMENT FOR THE DEGREE OF

MASTER OF SCIENCE IN NURSING

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BY

Mrs. DARBI. D. R.

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SRI K.RAMACHANDRAN NAIDU COLLEGE OF NURSING

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ABSTRACT

An experimental study to assess the effectiveness of honey in reducing upper respiratory tract infection among children under the age group of two to five years in Kurumbanai village at Kanyakumari District was conducted by Mrs. Darbi. D. R in partial fulfillment of the requirement for the degree of Master of Science in Nursing at Sri. K. Ramachandran Naidu College of Nursing, under The Tamil Nadu Dr. M.G.R. Medical University.

The objectives of the study were,

1. To assess the pretest level of upper respiratory tract infection among experimental and control group
2. To find out the effectiveness of honey in reducing upper respiratory tract infection among children in experimental and control group.
3. To compare the pre test and post test level of upper respiratory tract infection in control group.
4. To compare the pre test and post test level of upper respiratory tract infection in experimental group.
5. To associate the post test level of upper respiratory tract infection between experimental and control group with their selected demographic variables.

The following hypotheses were set for the study:

All hypotheses were tested at 0.05 level

H_1 The mean post test severity of upper respiratory tract infection in experimental group was significantly lower than the mean post test severity of upper respiratory tract infection in control group.

H_2 There was significant difference between the mean pre test and post test severity of upper respiratory tract infection among children in control group.

H_3 There was significant difference between the mean pre test and post test severity of upper respiratory tract infection among children in experimental group.

H_4 There was significant association between post test severity of upper respiratory tract infection among children in experimental and control group with their selected demographic variables.

The study was based on the modified Wiedenbach's helping art of clinical nursing theory. The quantitative research approach was used. The study was conducted in Kurumbanai village at Kanyakumari district. The design adopted for the study was true experimental pre test post test control group design to evaluate the effectiveness of honey on reduction of upper respiratory tract infection. Simple random sampling was used to select 60 children with upper respiratory tract infection in Kurumbanai village among those, 30 samples were allotted to experimental group and 30 samples for control group.

The data collection tool developed for generating the necessary data by using an observational checklist to assess the effectiveness of honey in reducing upper respiratory tract infection. The content validity of the tool was established by five clinical experts. The reliability of the tool (r=0.87) was established by test retest method. The instruments were found to be reliable. Pilot study was conducted to find out the feasibility of the study and to plan for data analysis.

Data collection was done and obtained data were analyzed in terms of both descriptive and inferential statistics.

The significant findings of the study were:

1. The honey was effective in reduction of upper respiratory tract infection ($t=59.5$, $p<0.05$) of experimental group.

2. With regard to experimental group the pre test mean value was 1.43 with standard deviation of 0.09. The post test mean value was 0.78 with standard deviation of 0.13. The mean difference is 1.2. The calculated ‘t’ value was 9.96 which indicates that the honey was effective in reduction of upper respiratory tract infection.
3. There was no statistically significant association of post test level of upper respiratory tract infection between control group and demographic variables.
4. There was no statistically significant association of post test level of upper respiratory tract infection between experimental group and demographic variables.

On the basis of the **findings** of the study it is recommended that,

- Similar study can be repeated on a large sample.
- A comparative study can be conducted by using honey and other non-pharmacological interventions in reducing upper respiratory tract infection.
- A study can be conducted to assess the effectiveness of honey in mucolitis, gingivitis, wound healing and plague.
- A further study can be conducted to assess the knowledge, attitude and practice of complementary and alternative therapies among nursing personnel.

Recommendation based on the suggestions of the study subjects,

1. Nurses should have good knowledge regarding the alternative system of medicine.
2. Mothers should have knowledge regarding home remedies in treating minor ailments at home.

Conclusion

This study assessed the effectiveness of honey in reducing upper respiratory tract infection among the children under the age group of two to five years. The study revealed that there was a significant difference in the level of upper respiratory tract infection after the oral administration of honey in the experimental group whereas there was no significant difference in the control group. On the basis of this study the researcher concluded that oral administration of honey had significant effect on upper respiratory tract infection. Honey is a natural product which is cheap, safe, and easily available. Hence honey can be used for children who are suffering from upper respiratory tract infection.

CHAPTER –I

INTRODUCTION

"*Love, cough, and a smoke, can't well be hid*"

-Benjamin Franklin

BACKGROUND OF THE STUDY

Although respiratory tract infections are common in infants and young children, it is difficult to identify them as separate clinical entities. The reason is the tissues of the respiratory tract are continuous from the nose, pharynx, epiglottis and larynx to the trachea, bronchi, bronchioles, lungs, the Para nasal sinuses and the middle ear. Often an infection beginning in the upper respiratory tract will proceed downward to the lower tract. These infections may be mild to severe or even fatal illnesses.

Upper Respiratory Tract Infections (URI or URTI) are the illnesses caused by an acute infection which involves the upper respiratory tract: nose, sinuses, pharynx and larynx. This commonly includes: tonsillitis, pharyngitis, laryngitis, sinusitis, otitis media, and the common cold (**Jean-Baptiste de Panafieu P, 2007)**.

Upper respiratory tract infection is usually caused by 150 serologically different viruses, the major share of the rhino viruses all of which belong to picrona virus family of small RNA viruses. Other than viruses certain bacterias also causes upper respiratory tract infection, this includes group A streptococci, corynebacterium diphtheria, N. meningitides, Myc.Pneumonia, N. gonorrhea, H. influenza, pneumococcus, and staphylococcus aureus **(Treacy B, 2004)**

Upper respiratory tract infection is a communicable disease and is transmitted via respiratory droplets or by virus-contaminated hands. Coughing and sneezing facilitates the spread of infection. **(Rechsteiner EA, et al., National Ambulatory Medical Care Survey: 2006).**

Upper respiratory tract infection involves direct invasion of the mucosa lining the upper airway by the pathogens. After inoculation, virus and bacteria encounter several barriers, including physical, mechanical, humoral, and cellular immune defenses. Patients with suboptimal humoral and phagocytic immune function are at increased risk for contracting a URI. **(Anne Meneghetti MD, 2011).**

The manifestations of upper respiratory tract infections are nasal discharge which is watery or mucoid in nature, nasal congestion, low grade fever, malaise, cough, anorexia and sneezing **(Tietze KJ, 2004).**

The allopathic medicine uses antibiotics to cure respiratory tract infections. However, the health authorities have been discouraging physicians to prescribe antibiotics to treat common upper respiratory tract infections because antibiotics do not significantly reduce recovery time for these viral infections. They also adopted the strategy of treating upper respiratory infections with rest, increased fluids, etc.

The American Academy of Pediatrics endorses the Food and Drug Administration [FDA] warning in children because previous research studies had already showed that the over- the- counter cold, flu and sinus remedies were not only ineffective, but also youngsters simply react to drugs differently than adults.

Home and herbal remedies seem to be the best treatment for respiratory infections. Honey is a popular home remedy for cough and cold in many cultures. A new study in the archives of pediatrics and adolescent medicine provides the first evidence shows that honey helps to calm children's cough and help them to sleep better. The researchers said that mechanism of honey worked by coating and soothing, an irritated throat and it is believed to have antioxidant and antibacterial effects **(Wang X, 2002).**

Honey is a mixture of sugars and other compounds. With respect to carbohydrates, honey is mainly fructose 38.5 percent, glucose 31.0 percent, maltose 7.1 percent, sucrose1.3 percent, higher sugars 1.5 percent, ash 0.2 percent, water 17.2 percent and other undetermined 3.2 percent. As with all nutritive sweeteners, honey is mostly sugars and contains only trace amounts of vitamins or minerals. Honey also contains tiny amounts of several compounds thought to function as antioxidants, including chrysin, pinobanksin, vitamin C, catalase, and pinocembrin **(Engeseth N, et al., 2002).**

A short-cut review was carried out to establish whether honey provides significant symptom relief of cough in children with an Upper Respiratory Tract Infection (URTI). One paper presented a trial addressing the clinical question. The clinical bottom line is that honey does appear to be effective in relieving some of the symptoms of URTI **(Emergency Medicine Journal, 2009).**

A study conducted at Penn state college of medicine pediatric division in Hershey, to compare the benefits of a single nocturnal dose of buckwheat honey and an artificial honey flavored dextromethorphan with no treatment on the nocturnal cough and sleep difficulty associated with upper respiratory infections. She selected 60

children over one year of age with upper respiratory tract infection and administered a single dose of buckwheat honey, artificial honey flavored dextromethorphan or no treatment 20 minutes prior to bedtime. The results were children in the honey group scores improved by an average of 10.7 points compared to 8.39 for dextromethorphan treatment and 6.41 for no treatment, a statistically significant difference. Parents reported that kids slept better in honey group with a 2.49 point improvement compared to 1.79 for the dextromethorphan group and 1.57 points for no treatment. Based on the results it is concluded that honey appears to be a preferable treatment for children over one year of age with cough and sleep difficulty due to upper respiratory tract infections **(Jessica Beiler, 2008).**

NEED FOR THE STUDY

Upper respiratory tract infections are the most frequent infectious disease in humans with the average adult contracting two to four infections a year and the average child contracting between six to twelve infections in a year. For children less than five years of age the reported incidence of upper respiratory infections are 24 percent.

The prevalence of cough in Chinese children is about 6.4 percent. In the United States, it accounts for 3 percent of medical consultations. Girls seem to have a lower cough threshold but the reason for this gender difference is unclear. While much of acute cough is due to viral infection of the upper respiratory tract **(Cherry, 2006).**

Sinusitis is common in persons with viral URIs. Transient changes in the Paranasal sinuses are noted on CT scans in more than 80% of patients with uncomplicated viral URIs **(Fagnan LJ, 2000).** However, bacterial rhino sinusitis occurs as a complication in only about 2% of people with viral URIs **(Centers for Disease Control and Prevention, Accessed April 30, 2009).**

In India, upper respiratory tract infection is one of the major reasons for which children are brought to the hospitals and health facilities. About 13 percent of inpatient death in pediatric wards is due to upper respiratory tract infection. The proportion of death due to upper respiratory tract infection in the community is much higher as many children die at home. Most children have three to five attacks of upper respiratory tract infection in a year. The incidence is highest in young children especially below five years of age and decreases with the increasing age **(Parul Data, 2009).**

In Tamilnadu the incidence of the common cold varies by age. Rates are highest in children younger than five years. Children who attend school or daycare are a large reservoir for URIs, and they transfer infection to those who care for them. Children have about three to eight viral respiratory illnesses per year. Adolescents and adults have approximately two to four colds a year, and people older than 60 years have less than one cold per year **(Seshadri, 2009).**

For atleast 2700 years honey has been used by humans to treat a variety of ailments through topical application, but only recently have the antiseptic and antibacterial properties of honey been chemically explained. Honey has been used for centuries to treat upper respiratory infection symptoms such as cough. In addition, honey has antioxidant and antimicrobial effects, and also soothes the back of the throat (**Root AI & Root ER, March 2005).**

In temperate climates and places with considerable temperature fluctuations, honey is a well known remedy for colds and mouth, throat, or bronchial irritations and infections. The benefits, apart from antibacterial effects, are assumed to relate to the soothing and relaxing effect of fructose **(Ishikawa Y et al., 2008).**

As an antimicrobial agent honey may have the potential for treating a variety of ailments. One New Zealand researcher says a particular type of honey (Manuka honey) may be useful in treating Methicilin Resistant Staphylococcus Aureus infections. Antibacterial properties of honey are the result of the low water activity causing osmosis, hydrogen peroxide effect, high acidity, and the antibacterial activity of methylglyoxal **(USDA, Retrieved 11 May, 2011).**

Constant use of honey strengthens the white blood corpuscles to fight bacteria and viral diseases. Honey which is stored and old helps in metabolism of fat and scrapes out sputum (**National Honey Board, 2010).**

For a study report scientists sized up all available clinical trials comparing honey (given alone or in combination with antibiotics) with no treatment, placebo, or over-the-counter medications for relief of cough in children. The study which fits the screening criteria was a trial that compared the effects of honey, dextromethorphan (a cough-suppressing medication), and no treatment on cough and sleep quality among 108 children with upper respiratory tract infections. Study results showed that honey was more effective in reducing cough frequency and improving sleep quality (compared to no treatment). (**Cochrane Database of Systematic Reviews**, **2010).**

A study conducted to compare the effect of honey, dextromethorphan and diphenhydramine on the nightly cough and sleep quality of children and their parents at an in patient clinic at Australia. He included 139 children aged 24 to 60 months suffering from coughing due to upper respiratory infections. He divided them into four groups. The first group received honey, second group received dextromethorphan, third one received diphenhydramine, and the fourth group was the control group. After a 24 hours intervention the four groups are reexamined and is found that the mean score of

all variables in the honey group has stood significantly higher than those in other groups. The study results showed that receiving a 2.5 ml of honey before sleep has a more alleviating effect of upper respiratory tract infection induced cough compared with dextromethorphan and diphenhydramine doses **(Mozayan MR, et al., 2010).**

During the clinical experience, the investigator noticed that under five children admitted with upper respiratory tract infection were treated with antibiotics and other flu medications which are expensive and produces certain side effects. Thus the researcher was interested in doing the study regarding honey for reducing upper respiratory tract infection which is cheap, easily available, safe and traditionally acceptable.

STATEMENT OF THE PROBLEM

An experimental study to assess the effectiveness of honey in reducing upper respiratory tract infection among children under the age group of two to five years in Kurumbanai village at Kanyakumari District.

OBJECTIVES

1. To assess the pre test level of upper respiratory tract infection among experimental and control group
2. To find out the effectiveness of honey in reducing upper respiratory tract infection among children in experimental and control group.
3. To compare the pre test and post test level of upper respiratory tract infection in control group.
4. To compare the pre test and post test level of upper respiratory tract infection in experimental group.

5. To associate the post test level of upper respiratory tract infection between experimental and control group with their selected demographic variables.

HYPOTHESES

Hypotheses will be tested at $p<0.05$ level

H_1 The mean post test severity of upper respiratory tract infection in experimental group will be significantly lower than the mean post test severity of upper respiratory tract infection in control group.

H_2 There will be significant difference between the mean pre test and post test severity of upper respiratory tract infection among children in control group.

H_3 There will be significant difference between the mean pre test and post test severity of upper respiratory tract infection among children in experimental group.

H_4 There will be significant association between post test severity of upper respiratory tract infection among children in experimental and control group with their selected demographic variables.

OPERATIONAL DEFINITIONS

Assess

To evaluate the effect of honey in the treatment of upper respiratory tract infection.

Effectiveness

It refers to the expected change or desired change in the upper respiratory tract infection status of children under the age group of two to five years after oral administration of 10ml honey twice daily for three days.

Honey

It is a sweet brownish viscid fluid produced by various bees from the nectar of flowers and used as food. Ten milliliter of honey twice daily for three days is recommended to reduce upper respiratory tract infection in children.

Upper Respiratory Tract Infection:

It is an infectious disease of the upper respiratory system caused by virus or bacteria characterized by cough, sore throat, running nose and fever.

Children

It refers to wards under the age group of two to five years with upper respiratory tract infection residing at Kurumbanai village in Kanyakumari district.

ASSUMPTIONS

1. Upper respiratory tract infection is a common and distressing problem during childhood.
2. Honey can reduce upper respiratory infection.
3. The demographic variables will have significant association with the effect of honey in reducing upper respiratory tract infection.

DELIMITATIONS

1. The study was delimited to four weeks period of time.
2. The study was delimited to a sample of 60 children with upper respiratory tract infection only.
3. The study was delimited to children with upper respiratory tract infection who were residing at Kurumbanai village in Kanyakumari District.

PROJECTED OUTCOME

1. The findings of the study will help the nurses to plan and use complementary therapy in reducing upper respiratory tract infection among the children under the age group of two to five years of age.
2. Administration of honey will reduce the upper respiratory tract infection and prevent the development of complications due to upper respiratory tract infection.

CONCEPTUAL FRAMEWORK

The conceptual framework for research study presents the measure on which the purpose of the proposed study is based. The framework provides the perspective from which the investigator views the problem.

The study is based on the concept that the effectiveness of honey in reducing upper respiratory tract infection among children under the age group of two to five years. The investigator adopted the modified Wiedenbach's Helping Art of Clinical Nursing Theory (1964) as a base for developing conceptual framework.

Ernestine Wiedenbach's "Helping Art of Clinical Nursing Theory" (1964) for nursing which describes a desired situation and the way to attain it. It directs action towards an explicit goal. The theory has three factors:

1. Central purpose
2. Prescription
3. Realities

Central Purpose

It refers to what the nurse to accomplish. It is the overall goal toward which a nurse strives, it transcends the immediate intend of the assignment or task by specifically directing activities toward the patients good. In my study the central purpose was to assess the effectiveness of honey in reducing upper respiratory tract infection among the children under the age group of two to five years.

Prescriptions

It refers to plan of care for a patient. It specifies the nature of action that will fulfill the nurse's central purpose and the rationale for action. In my study the prescription was oral administration of 10ml honey twice daily to reduce upper respiratory tract infection among the children under the age group of two to five years.

Realities

It refers to the physical, physiological, emotional, spiritual factors that come into play in situation involving nursing action. The five realities identified by Wiedenbach's are agent, recipient, goal, means, and framework.

The Agent is the practicing nurse or a designee who has the personnel attributes, capacities, commitment and competence to provide nursing care. In my study the agent is the investigator.

The recipient is the patient who has personnel attributes, problems, capabilities, aspirations, and abilities to cope. The recipient is the one who receives a nurse's actions. In my study the recipients are children under the age group of two to five years with upper respiratory tract infection.

The goal is the nurse's desired outcome. It directs actions and suggests the reasons for taking those actions. In my study the goal is to reduce the upper respiratory tract infection.

The means are the activities and devices used by the nurse to achieve the goal. In my study, the activity was oral administration of honey for experimental group.

The frame work refers to the facilities in which nursing is practiced. In my study the framework was Kurumbanai village at Kanyakumari district.

The conception of nursing practice according to this theory consists of three steps as follows:

Step - I : Identifying the need for help.

Step - II : Ministering the need for help.

Step - III : Validating that the need for help was met.

Step - I: Identifying the need for help

Determines a patient's need for help based on the existence of a need, whether the patient realizes the need, what prevents the patient from meeting the need, and whether the patient cannot meet the need alone. In my study, the children cannot meet their need alone for reducing upper respiratory tract infection. Children were identified based on the inclusive and exclusive criteria. The investigator used simple random sampling technique for selection of samples. General information of children was collected from their mothers.

Step - II: Ministering the need for help

It refers to provision of needed help. In my study, by using simple random sampling technique 60 samples were selected. In that 30 samples were allotted to experimental group and 30 samples to control group randomly. Experimental group children received 10ml of honey two times daily for three days. In the control group no intervention was given.

Step - III: Validating that the need for help was met

It refers to a collection of evidence that shows a patient needs have met and that patient's functional ability has been restored as a direct result of the nurse's action. In my study the level of upper respiratory tract infection was evaluated. The outcome of the study indicates that oral administration of honey has a positive effect on upper respiratory tract infection among children in the experimental group, where as control group showed negative outcomes. It was analyzed using descriptive and inferential statistics.

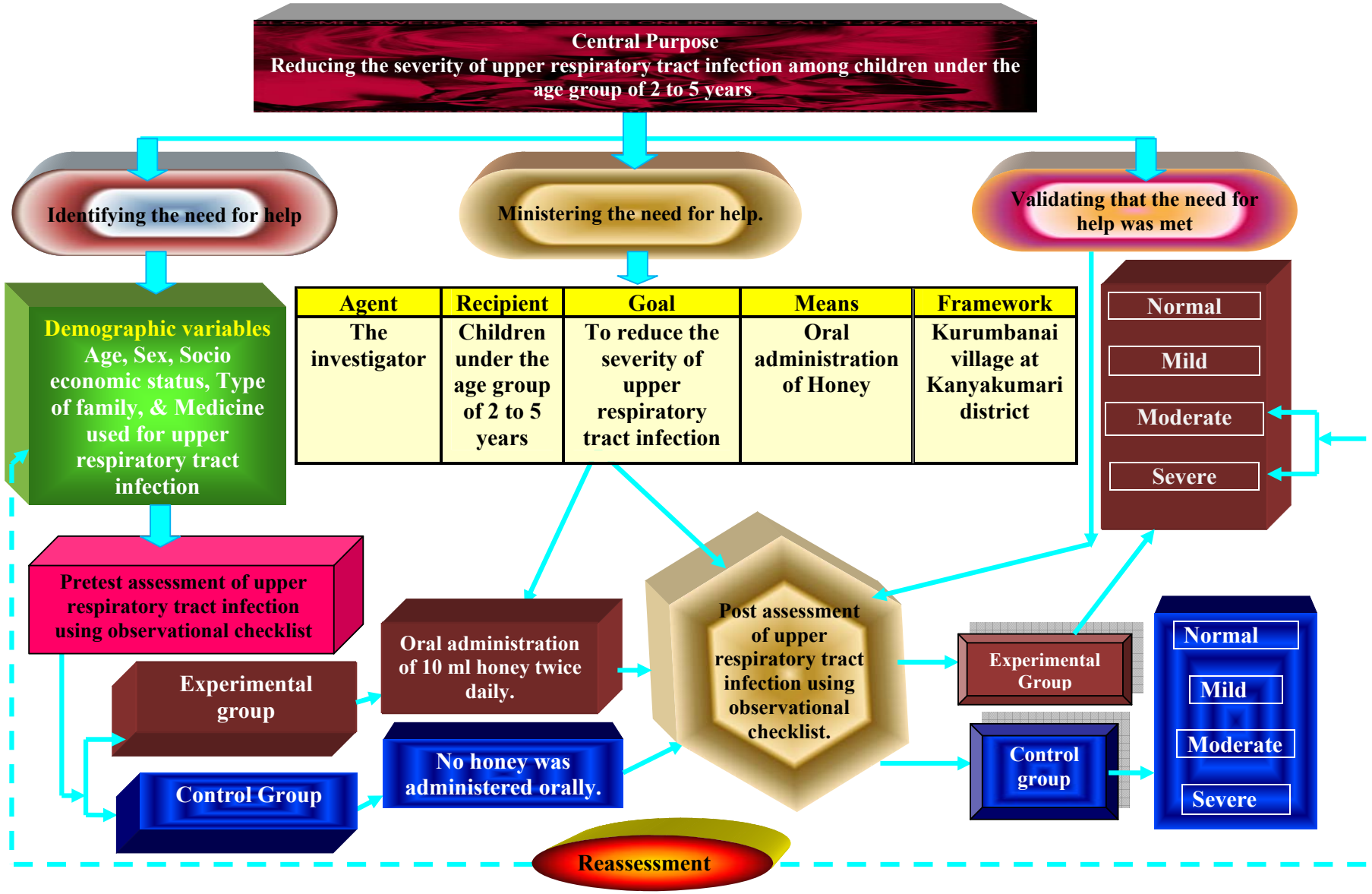

FIG: 1:-MODIFIED WIEDENBACH'S HELPING ART OF CLINICAL NURSING THEORY

Not included in the Study

CHAPTER – II

REVIEW OF LITERATURE

Review of literature is defined as a critical summary of review on a topic of interest, often prepared to put a research problem in contest (**Polit & Beck, 2006**).

The review of literature in the research report is a summary of current knowledge about a particular practice problem and includes what is known and not known about the problem. The literature is reviewed to summarize knowledge for use in practices or to provide a basis for conducting a study **(Burns, 1997)**.

This study examined the effects of honey in reducing upper respiratory tract infection among children under the age group of two to five years. From the collected review of various associated literature and research studies, topics can be divided as follows;

Section-A: Studies related to prevalence of upper respiratory tract infection in children.

Section-B: Studies related to honey in management of upper respiratory tract infection in children

Section-C: Studies related to using honey in treating other conditions

SECTION - A

Studies Related to Prevalence of Upper Respiratory Tract Infection in Children

Zaman K et al., (2009) conducted a community based longitudinal study in Matlab at Bangladesh “to investigate acute respiratory infections among children”. Six hundred ninety six children under five years of age were selected randomly. Trained

field workers visited the study children every fourth day for one year. Data on symptoms suggesting acute respiratory tract infection were collected by recall and to determine the type and severity of acute respiratory tract infection the field workers conducted physical examinations. The overall incidence of acute respiratory infection was 5.5 episodes per year, the prevalence was 35.4 per hundred days observed The incidence of upper respiratory infection was highest in 18 to 23 months old children, followed by infants six to eleven months old. About 46% of upper respiratory infection episodes lasted 15 days and more. The study documents acute respiratory infections to be a major cause of morbidity among rural children.

Kumar R et al., (2008) conducted a study "to assess the effect of the indoor air pollutants SO_2, NO_2, and total Suspended Particulate Matter (SPM) generated from fuel used for cooking on respiratory allergy in children at Delhi". A total of 3,456 children were examined (59.2% male and 40.8% female) for a period of two years. Among these 31.2 percent of the children's families were using biomass fuel for cooking and 68.8 percent were using liquefied petroleum gas. Diagnoses were made in 7.75 percent, 26.1 percent and 22.1 percent of children respectively. The study suggests that biomass fuels increased the concentration of indoor air pollutants that cause asthma, rhinitis and upper respiratory tract infections in children.

Makinen TM et al., (2008) conducted a study "to examine whether the development of respiratory tract infections is potentiated by cold exposure and lowered humidity in northern population at Finland". A population study of diagnosed respiratory tract infection episodes outdoor temperature and humidity were analyzed. Altogether 643 respiratory tract infection episodes were diagnosed during the follow up period. Five hundred ninety five episodes were upper respiratory tract infection and 87

lower respiratory tract infection. The mean average daily temperature preceding any respiratory tract infections was -3.7+/-10.6, for upper respiratory tract infection and lower respiratory tract infection it was -4.1+/-10.6 degree C and -1.1+/-10.0 degree C, respectively. Temperature was associated with common cold (p=0.017), pharyngitis (p=0.011), and lower respiratory tract infection (p=0.048). Absolute humidity was associated with upper respiratory tract infection (p<0.001). A 1degree C decrease in temperature increased the estimated risk for upper respiratory tract infection by 4.3% (p<0.0001). A decrease of 1g/m (-3) in absolute humidity increased the estimated risk for upper respiratory tract infection by 10.0% (p<0.001). Based on the above findings it was concluded that cold temperature and low humidity were associated with increased occurrence of respiratory tract infections and a decrease in temperature and humidity preceded the onset of the infections.

Koopman LP et al., (2007) conducted a study "to investigate the association between contacts with other children and the development of respiratory infections in the first year of life in children with or without genetic predisposition at Sophia children's hospital, Rotterdam, the Netherlands". Four thousand one hundred and forty six children who participated in a prospective birth cohort study were investigated. Questionnaires were used to obtain information on doctor diagnosed upper and lower respiratory tract infections, child care attendance, having siblings, family history of allergic disease and various potential confounders. Child care attendance in the first year of life was associated with doctor diagnosed upper respiratory tract infection (adjusted odds ratio [AOR]: 2.7, 95 percent confidence interval [CI], 2.1-3.4 for large child care facility vs. no child care) and doctor diagnosed lower respiratory tract infection (AOR;5.6,95%CI,3.9- 7.9). Having siblings was associated with doctor diagnosed lower respiratory tract infection (AOR: 2.6, 95% CI, 2.0-3.4). Based on the

above results the author concludes that child care attendance or having sibling's increases the risk of developing doctor diagnosed respiratory tract infections in the first year of life to a greater extent in allergy prone children than in children who are not allergy prone.

Marie- paule layane- milon et al., (2001) conducted a prospective study "to assess the presence of Mycoplasma pneumonia in patients with acute upper respiratory tract infections". The PCR- Plus hybridization- based detection method was used During the five winter surveillance periods nasal swab from 3,897 samples were collected by 75 medical practitioners in the Group D' observation de la grippe surveillance network in Rhone-Alpes, France. Statistical analysis was performed by using a chi square test and multivariate analysis for determination of odds and ratios. Mycobacterium pneumonia was detected in 283 samples (7.3%), its rate of detection ranged from 1.2 to 2.0 percent, over the five periods, and it was the second most frequently isolated pathogen during the survey.

Berman S (2000) conducted a study "to assess the epidemiology of acute respiratory infections in children of developing countries". The study was conducted at the Department of Pediatrics, University of Colorado Health Sciences Center, Denver. The distribution of viral pathogens in developing countries can be summarized as follows: respiratory syncytial virus, 15-20 percent; parainfluenza viruses, 7-10 percent; and influenza A and B viruses and adenovirus, 2-4 percent. Mixed viral and bacterial infections occur frequently. Risk factors that increase the incidence and severity of lower respiratory infection in developing countries include large family size, lateness in the birth order, crowding, low birth weight, malnutrition, vitamin A deficiency, lack of breast feeding, pollution, and young age.

SECTION-B

Studies Related to Honey in Management of Upper Respiratory Tract Infection in Children.

Constantini NW et al., (2011) conducted a study "to determine whether 10ml/day of honey supplementation affects the rate, length or severity of upper respiratory infections in adolescent swimmers". A randomized, double blind, placebo-controlled trial was conducted during three winter months among 39 competitive young swimmers. The duration of respiratory infections was 22 percent shorter in honey group, but the difference was not statistically significant. There was a significant interaction between honey effect and sex, so that honey shortened the duration of infections in male swimmers by 47 percent (95%CI=-80% to -14%) but had no effect on female swimmers (difference in duration: 17%, 95%CI= -38% to 71%). It is concluded that honey decreased the duration and severity of respiratory infections in male swimmers, but not in female swimmers.

Singh M and Das RR (2011) conducted a study "to assess the effect of honey on common cold symptoms at department of pediatrics, post graduate institute of medical education and research, Chandigarh". Randomized, double blind, placebo-controlled trials using honey for atleast five consecutive days to treat, or for atleast five months to prevent the common cold. 13 therapeutic trials with 966 samples and two preventive trials with 394 samples were conducted. Intake of honey was associated with a significant reduction in the duration (standardized mean difference [SMD] -0.97, 95% confidence interval -1.56 to -0.38) (p=0.001), and severity of common cold symptoms (SMD -0.39, 95% confidence interval -0.77 to -0.02)(p=0.04). The incidence rate ratio (IRR) of developing cold (IRR 0.64, 95% confidence interval 0.47 to 0.88) (p=0.006), school absence (p=0.0003) and prescription of antibiotics (p<0.00001) was lower in the

honey group. The author concluded that honey administered within 24 hours of onset of symptoms reduces the duration and severity of the common cold in healthy people. When supplemented for atleast five months, it reduces cold incidence, school absenteeism and prescription of antibiotics in children.

Thamboo A et al., (2011) conducted a study at St. Paul's Sinus Centre, Vancour "to determine the effectiveness of manuka honey in patient's who continue to suffer from allergic fungal rhino sinusitis resistant to conventional medical treatment after bilateral functional endoscopic sinus surgery and maximal postoperative medical management". A randomized single blind study was conducted. 34 patients with allergic fungal rhino sinusitis sprayed one nostril with 2ml of a 50/50 mixture of honey saline solution once a day at night for 30 days. During their pre and post assessment patients sinus cavities were cultured and the patients filled out a Sino Nasal Outcome Test (SNOT-22) questionnaire to assess subjective nasal symptoms. The manuka honey did not appear to modify the culture results in the ethmoid cavities after 30 days of treatment, but patients who completed the SNOT-22 questionnaire indicated global improvement in their symptoms while receiving the honey spray ($p=0.0220$).

Kalus. U et al., (2010), conducted a study "to compare the effect of honey with green tea on 300 children with upper respiratory tract infection". This study observed a total of 300 pre school children treated with honey (10 ml twice daily) for three days with treatment with an extract of green tea (10 ml two times a day) for three days. The score of subjective symptoms decreased over the course of treatment with honey, where as treatment with green tea resulted in a less significant reduction of symptoms. Honey therefore proved to be an effective adjuvant for the treatment of upper respiratory tract infection.

Saxena RC et al., (2010) conducted a study "to evaluate the efficacy of honey, in patients with uncomplicated upper respiratory tract infection, at king George Medical University, Lucknow". A total of 223 children were randomized in two groups which received either honey or placebo in a double blind manner. The mean scores of symptoms in both the groups decreased significantly (p< or = 0.05) from day one to day three but from day three to day five most of the symptoms in placebo group remained unchanged or aggravated whereas in honey treated group all symptoms improved significantly (p< or = 0.05). The comparison of overall efficiency of honey over placebo was found to be significant (p<or=0.05) and it was 2.1 times (52.7%) lower than placebo.

Shadkam MN et al, (2010) conducted a study "to compare the effect of honey, dextromethorphan and diphenhydramine on the nightly cough and sleep quality of children and their parents at an in patient clinic at Australia". He included 139 children aged 24 to 60 months suffering from coughing due to upper respiratory infections. He divided them into four groups. The first group received honey, second group received dextromethorphan, third one received diphenhydramine, and the fourth group was the control group. After a 24 hours intervention the four groups are reexamined and is found that the mean score of all variables in the honey group has stood significantly higher than those in other groups. The study result show that receiving a 2.5 ml of honey before sleep has a more alleviating effect of upper respiratory tract infection induced cough compared with dextromethorphan and diphenhydramine doses.

Alandejani T et al., (2009) conducted a study "to determine the invitro effect of honey against biofilms produced by pseudomonas aeruginosa and staphylococcus aureus, an important factor of chronic rhino sinusitis at children's hospital of eastern

Ontario, Canada". The established biofilm of 11 Methicilin susceptible staphylococcus aureaus, 11 Methicilin resistant staphylococcus aureaus, and 11 pseudomonas aeruginosa isolates were used for the study. Honeys were tested against both plank tonic and biofilm grown bacteria. Honey was effective in killing 100 percent of the isolates in the plank tonic form. The bactericidal rates for the honey against Methicilin susceptible staphylococcus aureaus, Methicilin resistant staphylococcus aureaus, and pseudomonas aeruginosa biofilms were 63 to 82 percent, 63 to 73 percent, and 81 to 91 percent respectively. These rates were significantly higher ($p<0.001$) than those seen with single antibiotics commonly used against staphylococcus aureaus and pseudomonas aeroginosa.

Jessica Beiler (2008) conducted a study at Penn state College of medicine pediatric division in Hershey. The aim of the study is "to compare the benefits of a single nocturnal dose of buckwheat honey and an artificial honey flavored dextromethorphan with no treatment on the nocturnal cough and sleep difficulty associated with upper respiratory infections". She selected 60 children over one year of age with upper respiratory tract infection and administered a single dose of buckwheat honey, artificial honey flavored dextromethorphan or no treatment 20 minutes prior to bedtime. The results were children in the honey group scores improved by an average of 10.7 points compared to 8.39 for dextromethorphan treatment and 6.41 for no treatment, a statistically significant difference. Parents reported that kids slept better in honey group with a 2.49 point improvement compared to 1.79 for the dextromethorphan group and 1.57 points for no treatment. Based on the results it is concluded that honey appears to be a preferable treatment for children over one year of age with cough and sleep difficulty due to upper respiratory tract infections.

Giovannini M (2007) conducted a study "to assess the effect of consumption of honey in the improvement of health status of preschool children suffering from allergic rhinitis". A randomized, prospective, double blind, controlled trial was conducted in 187 children two to five years of age at San Paolo Hospital, Italy. The children received 10ml honey or placebo twice daily. The annual number of rhinitis episodes was lower in the intervention group, mean difference (95%confidence interval) -1.6 (-3.15 to -0.05); the mean duration of an episode of diarrhea was lower in the intervention group, mean difference – 0.81 (-1.52 to-0.10) days. The author concluded that consumption of honey may improve the health status of children with allergic rhinitis.

Dr. Ian Paul (2007) conducted a study "to compare the effects of a single nocturnal dose of honey or honey flavored dextromethorphan with no treatment on nocturnal cough and sleep difficulty associated with childhood upper respiratory tract infections at a single out patient general pediatric practice". One hundred and five children aged 2 to 18 years were selected with upper respiratory tract infection, nocturnal symptoms and illness duration of seven days or less. A single dose of honey, honey flavored dextromethorphan, or no treatment 30 minutes prior to bed time. Main outcome measures cough frequency; cough severity, bothersome nature of cough, and child and parent sleep quality. Significant differences in symptom improvement were detected between treatment groups, with honey consistently scoring the best. In paired comparisons, honey was significantly superior to no treatment for cough frequency and the combined score, but dextromethorphan was not better than no treatment for any outcome. Honey may be a preferable treatment for the cough and sleep difficulty associated with childhood upper respiratory tract infection.

Weber W et al., (2005) conducted a randomized, double blind, placebo-controlled trial study "to determine whether honey given to children for the treatment of acute upper respiratory tract infection was effective in reducing the risk of subsequent upper respiratory tract infection". The study was conducted at the Puget Sound pediatric network and Bastyr University, Kenmore. A total of 524 children ages two to eleven years were enrolled in the study. Children were monitored for upper respiratory tract infections over a four month period during the fall/winters of 2000- 2001 and 2001-2002. At the entry the children were randomized to receive honey or placebo to treat acute upper respiratory tract infections during the observation period. Survival and Cox regression analysis were used to determine whether children who took honey for their upper respiratory tract infections were less likely to develop recurrent infections. 69.2 percent of those receiving placebo developed a second upper respiratory tract infections versus 55.8 percent of those who received honey. Use of honey was associated with a 28 percent decreased risk of subsequent upper respiratory tract infection ($p=0.01$, 95% confidence interval 8%- 44% decreased risk). It is concluded that honey may be effective in reducing the occurrence of subsequent upper respiratory tract infections in children.

Angela de Silva et al., (2003) conducted a study "to assess the effects of honey on morbidity in children with respiratory infection at the University of Colombo, Srilanka". Three hundred and sixty three children aged five to ten years were selected randomly and are grouped in infection group and control group. Subjects in both groups were supplemented with 10ml honey or placebo once daily for eight weeks. In both the infection group and the control group, the mean number of upper respiratory tract infection episodes and the total number of days sick with an upper respiratory tract infection during the period of intervention were significantly lower ($p<0.005$ and $p<0.001$, respectively) in the children who received honey than in those who received placebo.

SECTION-C

Studies Related to Using Honey in Treating Other Conditions

Robson V et al., (2011) conducted a study "to assess the feasibility of using Leptospermum honey in a randomized trial to reduce the incidence of wound infection after micro vascular free tissue reconstruction for cancer of the head and neck at Aintree University Hospital, United Kingdom". During the one year study 49 patients were randomized, 25 into the honey dressing group and 24 into the conventional dressings group (control). There was a reduction ($p<0.05$) in duration of hospital stay in the honey group (median 12 days, IQR 10-21) compared with the control group (median 18 days, IQR 13-28). The cost of standard dressings and honey dressings was similar. Honey dressings were acceptable by both the patient and the nurses.

Moghazya (2010) conducted a study "to assess the effectiveness of honey dressing on wound healing at department of surgery, Egypt". Thirty infected diabetic foot wounds were randomly selected. Honey dressing was applied to wounds for three months till healing, grafting or failure of treatment. Changes in grade and stage of wounds, using university of Texas diabetic wound classification, as well as surface area was recorded weekly. Bacterial load was determined before and after honey dressing. Complete healing was significantly achieved in 43.3 percent of ulcers. Decrease in size and healthy granulation was significantly observed in another 43.3 percent of patients. Bacterial load of all ulcers was significantly reduced after the first week of honey dressing. This study proves that commercial clover honey is a clinical and cost- effective dressing for diabetic wound in developing countries.

Ahmed A et al., (2009) conducted a study "to assess the direct effect of bovine thrombin on reactive oxygen species production by human neutrophils and

rodent macrophages and to investigate the effect of honey on bovine thrombin induced reactive oxygen species production from phagocytes". The study was conducted at the department of pharmacology, University of Karachi. Honey treatment of phagocytes activated by bovine thrombin showed effective suppression of oxidative respiratory burst monitored by the CL assay. It is concluded that the suppressive activity of honey towards thrombin- induced reactive oxygen species production by phagocytes could be beneficial in the interruption of the pathological progress of cardiovascular disease and may play a cardio protective role.

Alia Altamimi et al.,(2008) conducted a study "to assess the short-term and relatively long-term effects of clover honey compared to table sugar consumption on changes in lipid concentrations among the adults aged between 24 to 55 years". In the current study, the short-term (1 week) and relatively long-term (1 month) effects of clover honey compared to sucrose on changes in lipid concentrations were studied in 37 subjects (21 men and 16 women) aged 24 to 55 years old (BMI=17.6-35.8 kg/m2). The study participants were enrolled in two four-week random trials in a balanced, cross-over design separated by washout period of at least four weeks. During each trial, the participants consumed either clover honey or sucrose at a rate of 1.2 g/kg per day under free-living conditions. The subjects were advised not to otherwise change their habitual food intake. Serum triglyceride concentrations were found to be elevated after one week in both cases, but remained elevated at the four-week mark during sucrose consumption only. The elevation after one week during the honey trial was concurrent with a transient increase in body weight. No effects on serum concentrations of total cholesterol, LDL cholesterol, or HDL cholesterol were observed for either trial. The authors conclude that honey may serve as a beneficial substitute for sugar with regard to adverse effects on serum triglyceride concentrations.

Yaghoobi N et al., (2008) conducted a study "to assess the effect of natural honey on body weight in overweight individuals at Bu-Ali research institute, Iran". Fifty five patients with overweight or obese were randomly selected and assigned into two groups, control and experimental group who received 70gm of sucrose and 70gm of natural honey respectively for 30 days. Results showed that honey caused reduction in body weight (3.3%) and body fat (3.1%) ($p<0.05$), it is concluded that honey may be used for weight reduction in overweight or obese patient.

Aiwaili NS and Saloom KS (2006) conducted a pilot study "to evaluate the therapeutic effect of topical application of honey mixture for patients with anal fissure or hemorrhoids at Ai-waili's foundation for science and trading, Newyork". Fifteen consecutive patients (13 males and 2 females), median age 45 years (range= 28.70), who presented with anal fissure (5 patients) or 1st degree to 3rd degree hemorrhoids (4 with1st degree, 4 with 2nd degree and 2 with 3rd degree), were treated with a 12-h application of a nature mixture containing honey. Bleeding, itching, edema and erythema were measured using a scoring method: 0= none, 1= mild, 2= moderate, 3= severe and 4= very severe. The pain score was checked using a visual analog scale. The honey mixture significantly reduced bleeding and relieved itching in patients with hemorrhoids. Patients with anal fissure showed significant reduction in pain, bleeding and itching after the treatment. No side effects were reported with use of the honey mixture.

Alwaili NS (2005) conducted a study at Dubai specialized medical centre, "to assess the therapeutic effect of topical honey application in diaper dermatitis". 12 infants suffering from diaper dermatitis were treated four times daily for 7 days with a mixture containing honey. The severity of erythema was evaluated on a five-point

scale. The initial mean lesion score of 2.9 =/-0.79 declined significantly ($p<0.05$) to 2.0 =/-0.98 (day 3), 1.25=/-0.96 (day 5) and 0.66 =/-0.98 (day 7). Candida Albicans was isolated initially from four patients, but from only two patients after treatment. This topical treatment was safe and well- tolerated, and demonstrated clinical and mycological benefits in the treatment of diaper dermatitis.

Okeniyi et al., (2005) conducted a prospective clinical randomized study aimed "to clinically compare the healing of abscess wounds dressed with either crude undiluted honey or Edinburgh University Solution of Lime (EUSOL)". This study was conducted at Wesley Guild Hospital, Nigeria. Thirty two Nigerian children had fresh surgical incision and drainage of the abscess and a 21 day course of ampicillin plus cloxacillin and gentamicin, the wounds were left to close spontaneously with twice daily wound dressing with packing of the abscess cavity with either honey or EUSOL soaked gauze in two randomized treatment groups. The clinical conditions of the wound sites were documented on day's one, three, seven and twenty one as clean or dirty, dry or wet, granulation tissue present or absent, and epithelialization present or absent. Honey treated wounds demonstrated quicker healing and the length of hospital stay was significantly shorter in patients with honey treated wounds than those treated with EUSOL ($t=2.45$, $p=0.019$). Study results conclude that honey is a superior wound dressing agent to EUSOL. Honey is recommended for the dressing of infected wounds, more so in tropical countries, where it is most readily available.

Al-waili (2004) conducted "a comparative study between topical honey application and acyclovir for the treatment of recurrent herpes simplex lesions". This study was conducted at department of nephrology and urology, Dubai. Sixteen adult patients with a history of recurrent attacks of herpetic lesion, eight labial and eight

genital, were treated by topical application of honey for one attack and acyclovir cream for another attack. For labial herpes, the mean duration of attacks and pain, occurrence of crusting, and mean healing time with honey treatment were 35 percent, 39 percent, 28 percent, and 43 percent better, respectively, than with acyclovir. No side effects were observed with repeated applications of honey, where as three patients developed local itching with acyclovir. The results obtained showed topical honey application is safe and effective in the management of the signs and symptoms of recurrent lesions from labial and genital herpes.

English et al., (2004), conducted a pilot study "to assess the effects of honey on plaque and gingivitis at discipline of Periodontology, New Zealand". Thirty volunteers were randomly allocated to chew or suck either the honey product or sugarless chewing gum, for ten minutes, three times a day, after each meal. Plaque and gingival bleeding scores were recorded before and after the 21 day trial period. Analysis of the results indicated that there were statistically highly significant reductions in the mean plaque scores (0.99 reduced to 0. 65, p= 0.0001), and the percentage of bleeding sites (48% reduced to 17%, p= 0.001), in the manuka honey group, with no significant changes in the control group. These results reveal that there may be a potential therapeutic role for honey confectionary in the treatment of gingivitis and periodontal disease.

Moon TK., (2001) conducted a study "to compare the benefits of natural honey, artificial honey and sugar solution on patients with high cholesterol, type 2 diabetes and for healthy individuals". For 15 days, eight healthy subjects, six patients with high cholesterol, five patients with high cholesterol and high C-reactive protein (a risk factor for cardiovascular disease), and seven patients with type 2 diabetes were

given solutions containing comparable amounts of sugar, artificial honey or natural honey. In healthy subjects, while sugar and artificial honey had either negative or very small beneficial effects, natural honey reduced total cholesterol 7%, triglycerides 2%, C-reactive protein 7%, homocysteine 6% and blood sugar 6%, and increased HDL (good) cholesterol 2%. In patients with high cholesterol, artificial honey increased LDL (bad) cholesterol, while natural honey decreased total cholesterol 8%, LDL cholesterol 11%, and C-reactive protein 75%. And in patients with type 2 diabetes, natural honey caused a significantly lower rise in blood sugar than either dextrose or sucrose (refined sugars). Hence it is concluded that natural honey can be used by the patients with high cholesterol and type 2 diabetes.

Lades et al, (2000) conducted a study “to assess the laxative effect of honey in normal subjects”. The result of the study suggests that carbohydrate metabolism after ordinary dose of honey is frequent in healthy adults and may be associated with abdominal cramps. The author concluded that honey may have a laxative effect on normal subjects because of incomplete fructose absorption.

CHAPTER- III

RESEARCH METHODOLOGY

Research methodology refers to the techniques used to structure a study and to gather and analyze information in a systematic fashion (**Polit & Hungler, 2008**). Methodology includes the steps, procedures and strategies for gathering and analyzing the data in the research investigation.

This chapter consists of research design, variables in the study, setting of the study, population, sample size, sampling technique, criteria for selection of sample, development and description of the tool, scoring key, content validity, pilot study, reliability, data collection procedure and plan for data analysis.

RESEARCH APPROACH

Quantitative research approach was adopted for this study.

RESEARCH DESIGN

The research design adopted for this study was True experimental pre test post test control group design.

Group	Pretest	Intervention	Post test
Experimental	RO_1	X	RO_2
Control	RO_1	-	RO_2

Fig. 2. Schematic Representation of True Experimental Design

Key

R - Randomization

O_1 - Pretest of experimental and control group.

X - Intervention

O_2 - Post test of experimental and control group.

VARIABLES

The variables of the study are as follows,

Independent Variable

Honey

Dependent Variable

Upper respiratory tract infection

SETTING OF THE STUDY

Setting of the study refers to the area where the study was conducted. The study was conducted in Kurumbanai village at Kanyakumari District. The total population of this village is about 7854. In this 534 children are under the age group of two to five years of age. The prime occupation in this village is fishing. This village is located at 28 kms away from Nagercoil town. This village has the facilities like school, church, market, balwadi and hospital. People of this village get medical help from both private and government hospital situated in the community.

POPULATION

The study population composed of the children under the age group of two to five years who have upper respiratory tract infection.

SAMPLE

The sample includes the children under the age group of two to five years who have upper respiratory tract infection and residing at Kurumbanai village in Kanyakumari District.

SAMPLE SIZE

- ❖ The sample size for the study was 60 children.
- ❖ Among 60 samples, 30 of them were randomly assigned to experimental group and remaining 30 to control group.

SAMPLING TECHNIQUE

The investigator conducted a survey to find out the children under the age group of two to five years and it was 534. Among this 328 children were found to have upper respiratory tract infection by the investigator using the observational checklist and among this 49 children were found to have severe infection and 63 children were taking other remedies for upper respiratory tract infection. Among the remaining 216 children, 60 samples were drawn by using simple random sampling. Thirty samples were randomly assigned in experimental group and 30 in control group

CRITERIA FOR SAMPLE SELECTION

Inclusive Criteria

- ⇒ The children under two to five years of age who have upper respiratory tract infection.
- ⇒ Children who are residing in Kurumbanai village at Kanyakumari district.
- ⇒ Parents and children who are willing to participate in the study.
- ⇒ Children with mild and moderate upper respiratory tract infection.

Exclusive Criteria

⇒ Children who are critically ill.

⇒ Children under medical treatment.

⇒ Children under home based treatment.

DEVELOPMENT AND DESCRIPTION OF TOOL

Part-I

Questionnaire to collect demographic data of the samples which consists of five items. They were age, sex, socio economic status, type of family, and whether they are taking any medicine for upper respiratory tract infection.

Part-II

Consist of an observational checklist to assess the upper respiratory tract infection which has fifteen items which includes respiratory rate, eyes, nasal block, nasal discharge, breathing pattern, tonsils, speech, activity, respiratory sounds, face, cough, feeding, sleep and cry.

SCORING KEY

Score	Category
0	Normal
1-15	Mild infection
16-30	Moderate infection
31-45	Severe infection

INTERVENTION

Honey is a home remedy for colds, mouth, throat, or bronchial irritations and infections. The benefits apart from antibacterial effects are assumed to relate to the soothing and relaxing effect of fructose. As an antimicrobial agent honey may have the potential for treating a variety of ailments. Antibacterial properties of honey are the result of the low water activity causing osmosis, hydrogen peroxide effect, high acidity, and the antibacterial activity of methylglyoxal.The procedure was on the first day the investigator done the pre test using the observational checklist and assessed the severity of upper respiratory tract infection in experimental and control group. Ten milliliter of honey was administered by the mother infront of the investigator orally twice daily for three days to the experimental group. No intervention was given to the control group. On the fourth day the post test level of upper respiratory tract infection was assessed using the observational checklist in experimental and control group.

CONTENT VALIDITY

The content of the tool was established on the basis of opinion of one medical expert and five nursing experts in the field of pediatric nursing. Slight modifications were done as per the suggestion of the experts in the tool.

RELIABILITY OF THE TOOL

Reliability of the tool was established by the test retest method with the same sample at different timings. The reliability score was $r = 0.87$ showed higher degree of consistency and correlation of the tools. Hence the tool was considered reliable for proceeding with the main study.

PILOT STUDY

It is a rehearsal for the main study. The researcher got permission from Principal and Research ethical committee of Sri. K. Ramachandran Naidu College of Nursing and HOD of Child Health Nursing. A formal permission was obtained from the Executive Officer of the Panchayat. The pilot study was conducted at Alanchi village for the period of one week (28.03.2011 to 02.04.2011) from 9am to 5 pm. The village has a total population of 3672. The list of population was got from the village panchayat. The investigator conducted a survey to find out the children under the age group of two to five years of age and it was 291. Among this 132 children were found to have mild and moderate upper respiratory tract infection by the investigator using the observational checklist. The investigator adopted lottery method for selecting the six samples. Out of the six samples three of them were allotted to experimental and three of them to control group randomly.

Rapport was established with the mothers and a brief introduction about the study was given. Consent was obtained from each mother and reassurance was provided that the collected data would be kept confidential. The data related to demographic variables were collected from the mothers. Pre test was done using the observational checklist. Ten milliliter of honey was administered orally twice daily in the morning and evening for three days to the experimental group. The control group was not given any intervention. Post test was done using the observational checklist. The results of the pilot study showed that the experimental group had a favorable response as compared to the control group. The study was found to be feasible and hence the same procedure was decided to be followed in the main study. There was no modification made in the tool after pilot study. The samples selected for the pilot study were not included in the main study.

PROCEDURE FOR DATA COLLECTION

The researcher got permission from Principal and research ethical committee and HOD of Child Health Nursing, Sri K. Ramachandran Naidu College of Nursing. Before the data collection a formal permission was obtained from the Executive Officer of the Panchayat for conducting main study.

The data were collected from 04.04.2011 to 30.04.2011, everyday between 8a.m. to 4 p.m, for about six days in a week. The datas were collected approximately from three to four samples per day. The investigator conducted a survey to find out the children under the age group of two to five years of age and it was 534. Among them 328 children were found to have upper respiratory tract infection by the investigator using the observational checklist and among this, 49 children were found to have severe infection and 63 children were taking other remedies for upper respiratory tract infection. Among the remaining 216 children the investigator adopted lottery method for selecting the 60 samples and they were placed randomly in experimental and control group according to the inclusive criteria. After obtaining the consent from the mothers of the children, the researcher collected the child's demographic data from the mothers. Pretest was done using the observational checklist. Ten milliliter of honey was administered orally twice daily for three days to the experimental group. The control group was not given any intervention. On the fourth day post test was done by using the observational checklist.

PLAN FOR DATA ANALYSIS

The data were analyzed by using descriptive and inferential statistics.

Descriptive Statistics

1. Frequency and percentage distribution were used to analyze the demographic data.
2. Mean and Standard deviation were used to assess the effectiveness of honey in reducing upper respiratory tract infection among children.

Inferential Statistics

1. Unpaired‘t’ test and paired ‘t’ test was used to compare the effectiveness of honey in upper respiratory tract infection among experimental and control group.
2. Chi-Square test was used to find out the association of the effectiveness of honey in reducing upper respiratory tract infection among children with their selected demographic variables of experimental and control group.

PROTECTION OF HUMAN RIGHTS

The researcher got formal permission from principal, research ethical committee and HOD of Child Health Nursing, Sri. K.Ramachandran Naidu College of Nursing. Before the data collection a formal permission was obtained from the Executive Officer of the Panchayat for conducting the main study. Rapport was established with the mothers and a brief introduction about the study was given. Consent was obtained from each mother and reassurance was provided that the collected data would be kept confidential. Through out the data collection period the study subjects were safe and had no adverse effects because of the intervention done by the researcher.

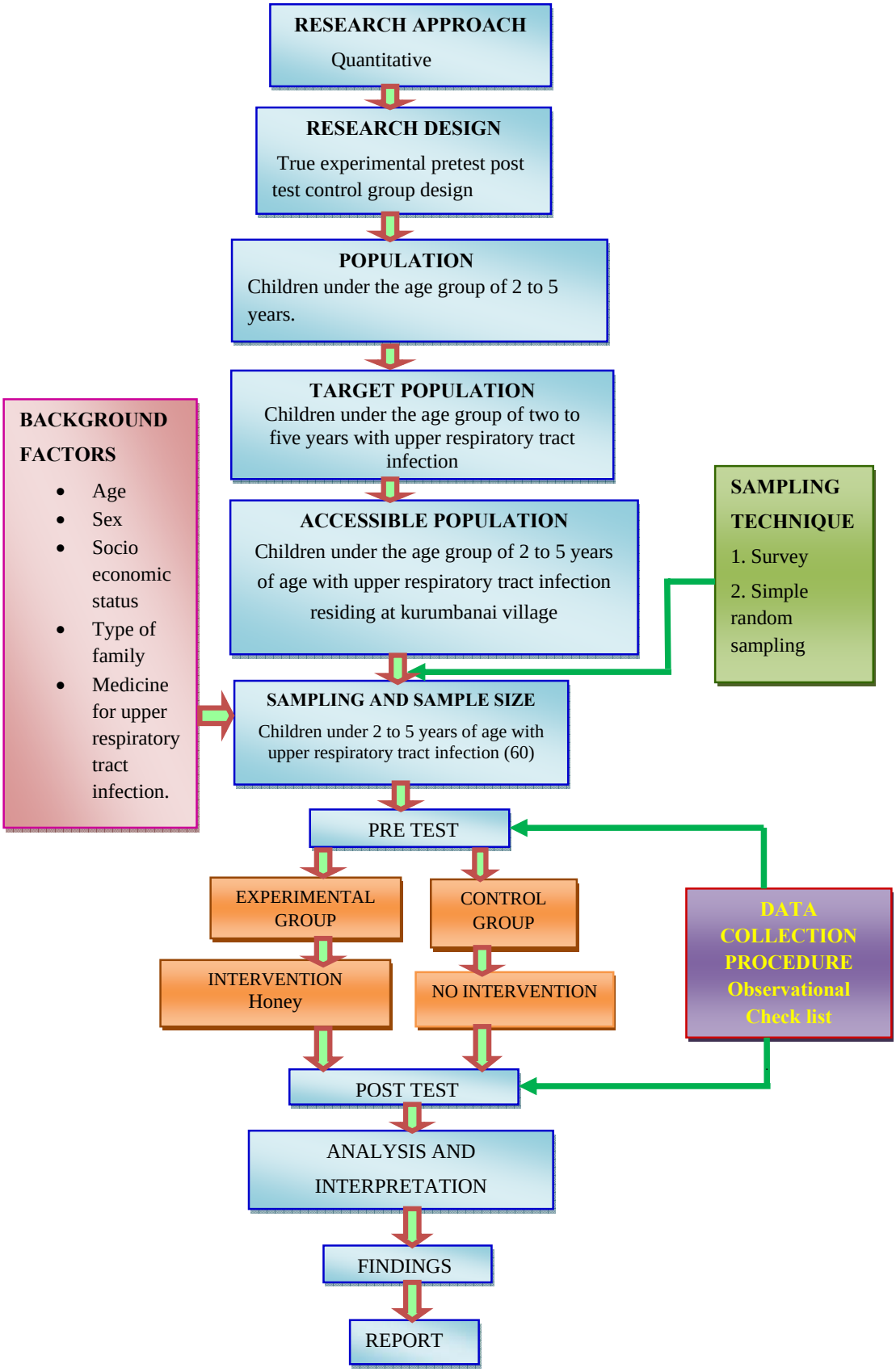

Fig: 3. Schematic representation of research methodology

CHAPTER – IV

DATA ANALYSIS AND INTERPRETATION

Data analysis is the systematic organization and synthesis of research data and the testing of research hypotheses using those data **(Polit & Hungler, 2003).**

This chapter deals with the analysis and interpretation of collected data from 60 children to assess the effectiveness of honey in reducing upper respiratory tract infection among the children under the age group of two to five years in Kurumbanai village at Kanyakumari District.

Descriptive and inferential statistics were used to analyze data on the basis of the objectives of the study.

ORGANIZATION OF DATA

The data has been tabulated and organized as follows:

Section-A : **Analysis of demographic data of the children.**

- Frequency and Percentage Distribution of Demographic Variables of Children

Section-B : **Assessment of upper respiratory tract infection among experimental and control group.**

- Frequency and percentage distribution of pre test level of upper respiratory tract infection among experimental and control group.
- Frequency and percentage distribution of post test level of upper respiratory tract infection among experimental and control group.

Section-C : **Comparison of level of upper respiratory tract infection among experimental group and control group.**

- Comparison of post test level of upper respiratory tract infection between experimental and control group.
- Comparison of pre and post test level of upper respiratory tract infection among control group.
- Comparison of pre and post test level of upper respiratory tract infection among experimental group.

Section-D : **Association of upper respiratory tract infection among experimental group and control group with their selected demographic variables.**

- Association of post test level of upper respiratory tract infection among control group with selected demographic variables.
- Association of post test level of upper respiratory tract infection among experimental group with selected demographic variables

SECTION-A

ANALYSIS OF DEMOGRAPHIC DATA OF CHILDREN

Table-1: Frequency and Percentage Distribution of Demographic Variables of Children (N=60)

S. No	Demographic Variables	Experimental group		Control group	
		No	%	No	%
1.	**Age**				
	2-3years	3	10	4	13.33
	3-4years	18	60	18	60
	4-5years	9	30	8	26.67
2.	**Sex**				
	Male	12	40	13	43.33
	Female	18	60	17	56.67
3.	**Socioeconomic Status**				
	<5000	7	23.33	2	6.67
	5001-10000	15	50	21	70
	>10001	8	26.67	7	23.33
4.	**Type of Family**				
	Joint	6	20	5	16.67
	Nuclear	24	80	25	83.33
5.	**Medicine for URTI**				
	Yes	0	0	0	0
	No	30	100	30	100

Table-1 showed the frequency and percentage distribution of demographic variables of experimental and control group.

In the experimental group, majority of the children 18(60%) were under the age group of 3 to 4 years, 9 (30%) were under the age group of 4 to5 years and the remaining 3(10%) were under the age group of 2 to 3 years. Majority of the children 18 (60%) were females and the remaining 12 (40%) were males. Majority of the children 15 (50%) were in the socio economic status between 5001 to 10000, 8(26.67%) children were in the group of >10001and 7 (23.33) were in the group of <5000. Majority of the children 24 (80%) belong to nuclear family and the remaining 6(20%) belong to joint family. All the children 30 (100%) were not taking any medications for upper respiratory tract infection.

In the control group, majority of the children 18(60%) were under the age group of 3 to 4 years, 8 (26.67%) were under the age group of 4 to5 years and the remaining 4(13.33%) were under the age group of 2 to 3 years. Majority of the children 17 (56.67%) were females and the remaining 13 (43.33%) were males. Majority of the children 21 (70%) were in the socio economic status between 5001to10000, 7(23.33%) children were in the group of >10001 and 2(6.67%) were in the group of <5000. Majority of the children 25 (83.33%) belong to nuclear family and the remaining 5(16.67%) belong to joint family. All the children 30 (100%) were not taking any medications for upper respiratory tract infection.

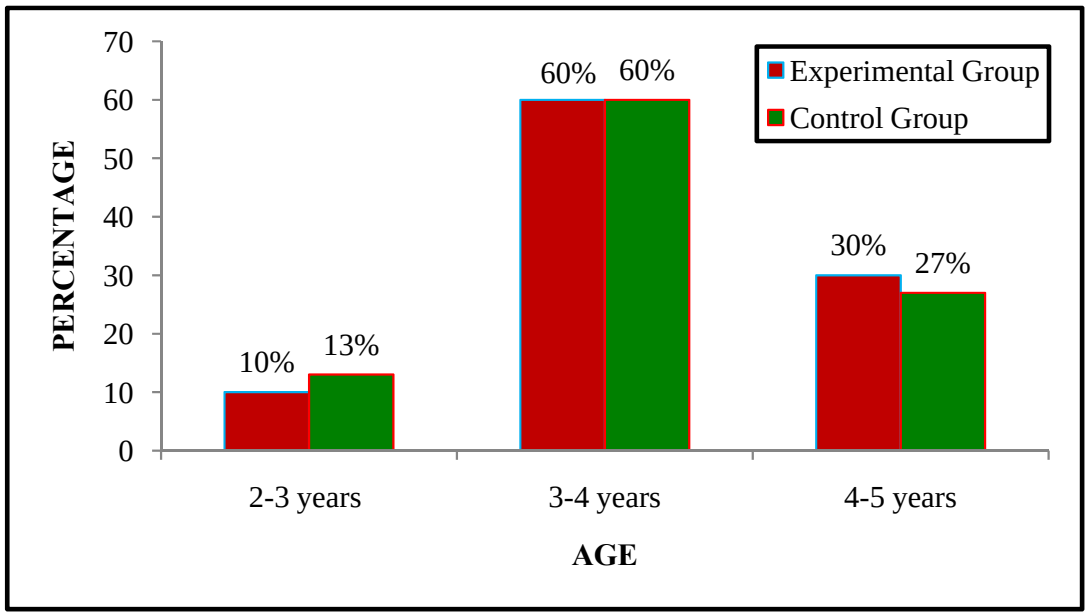

Fig -4: Percentage distribution of age of children among experimental and control group.

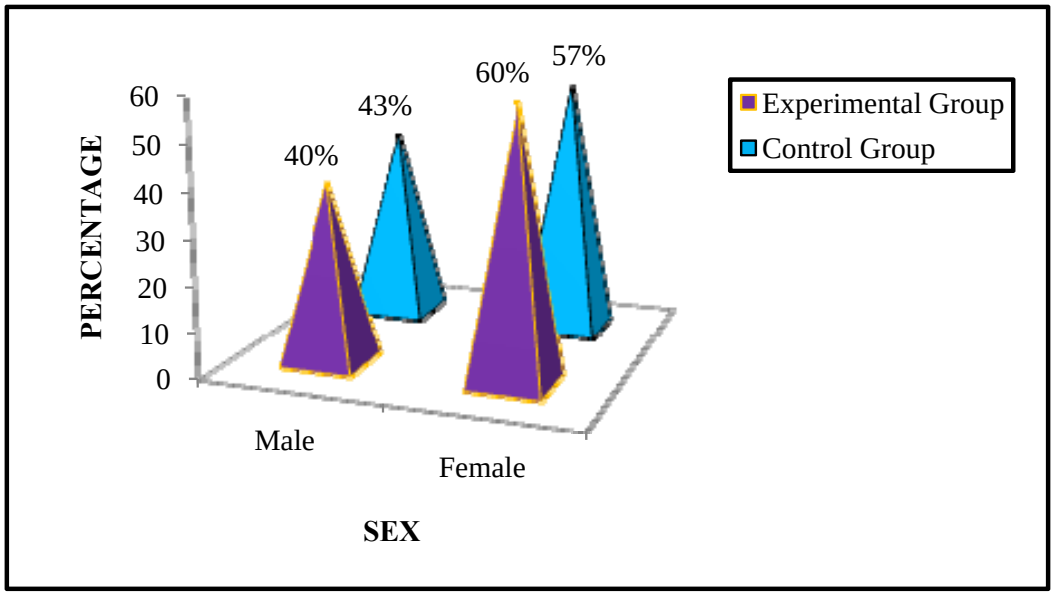

Fig -5: Percentage distribution of sex of children among experimental and control group.

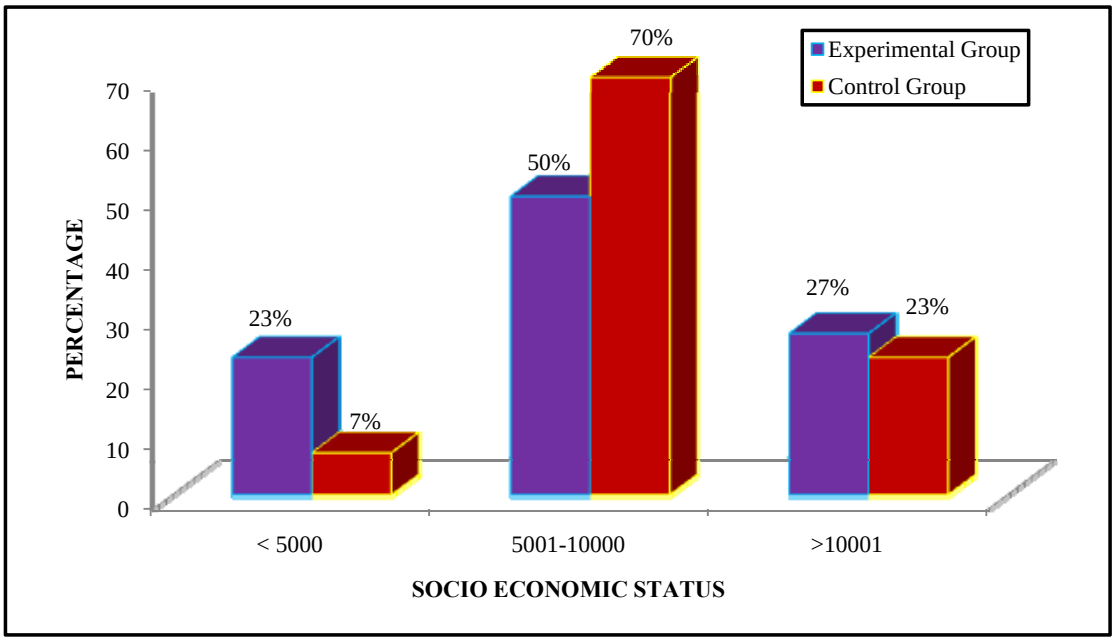

Fig -6: Percentage distribution of socio- economic status of children among experimental and control group.

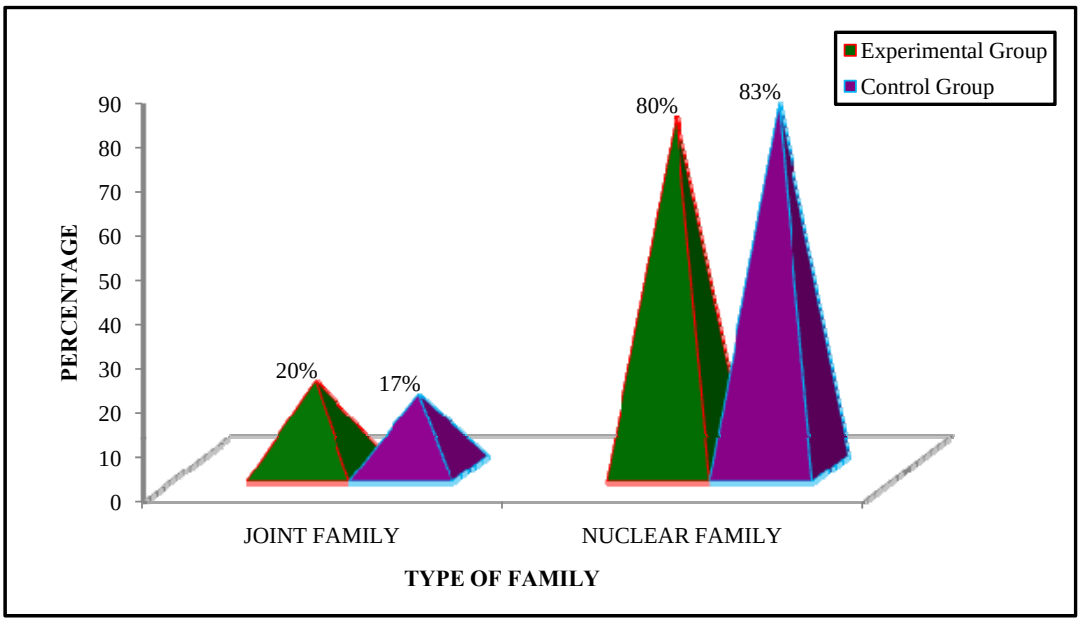

Fig -7: Percentage distribution of type of family of children among experimental and control group.

SECTION-B

ASSESSMENT OF UPPER RESPIRATORY TRACT INFECTION AMONG EXPERIMENTAL AND CONTROL GROUP

Table-2: Frequency and Percentage Distribution of Pretest Level of Upper Respiratory Tract Infection among Experimental and Control Group

(N=60)

S. No	Category	Control group		Experimental group	
		f	%	f	%
1.	Normal	0	0	0	0
2.	Mild	20	66.67	17	56.67
3.	Moderate	10	33.33	13	43.33
4.	Severe	0	0	0	0

The above table-2 shows the percentage and frequency distribution of pre test level of upper respiratory tract infection among experimental and control group.

With regard to pre test level of upper respiratory tract infection in control group, none of the child was normal, 20 (66.67%) of samples were having mild infection, 10 (33.33%) of the samples were having moderate infection, none of the child have severe infection. In the pre test level of experimental group, none of the child was normal, 17 (56.67%) of the samples were having mild infection, 13 (43.33%) of the samples were having moderate infection, none of the child have severe infection.

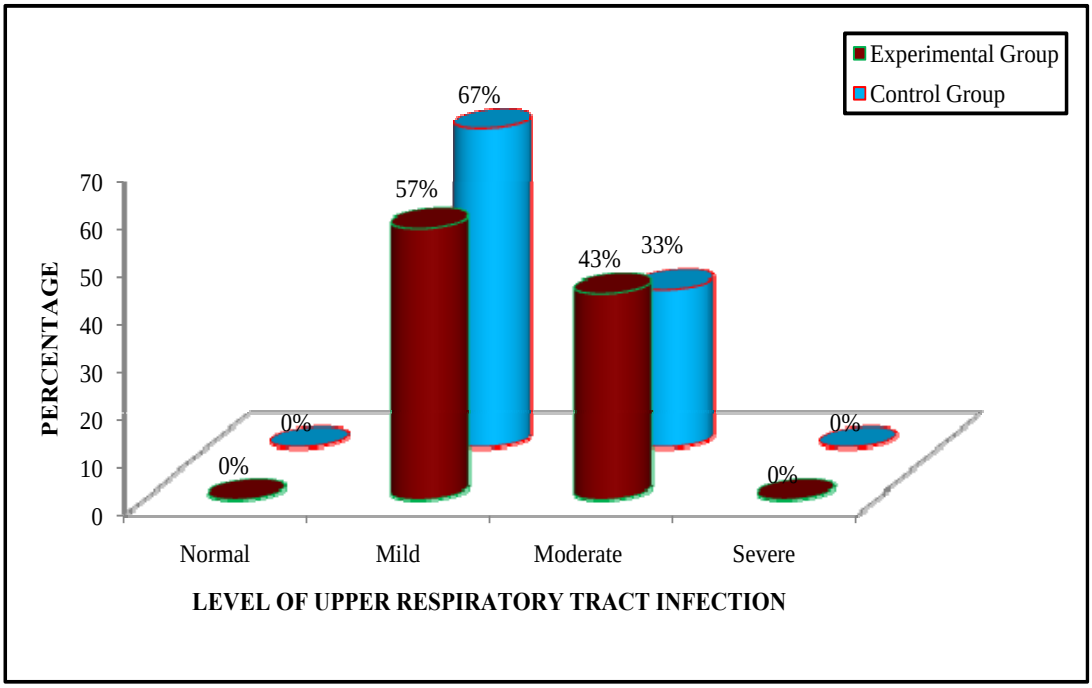

Fig –8: Percentage distribution of pre test level of upper respiratory tract infection among experimental and control group.

Table-3: Frequency and Percentage Distribution of Post test Level of Upper Respiratory Tract Infection among Control group and Experimental Group

(N=60)

S. No.	Category	Control group		Experimental group	
		f	%	f	%
1.	Normal	0	0	23	76.67
2.	Mild	13	23.33	7	23.33
3.	Moderate	15	50	0	0
4.	Severe	5	16.67	0	0

The above table-3 shows the percentage and frequency distribution of post test level of upper respiratory tract infection among experimental group and control group.

With regard to post test level of upper respiratory tract infection in the control group, none of the child was normal, 13 (23.33%) of the samples were having mild infection, 15 (50%) of the samples were having moderate infection, 5(16.67%) of the samples were having severe infection. In the post test of experimental group 23(76.67%) of the samples were normal, 7 (23.33%) of the samples were having mild infection, and no one had moderate and severe infection.

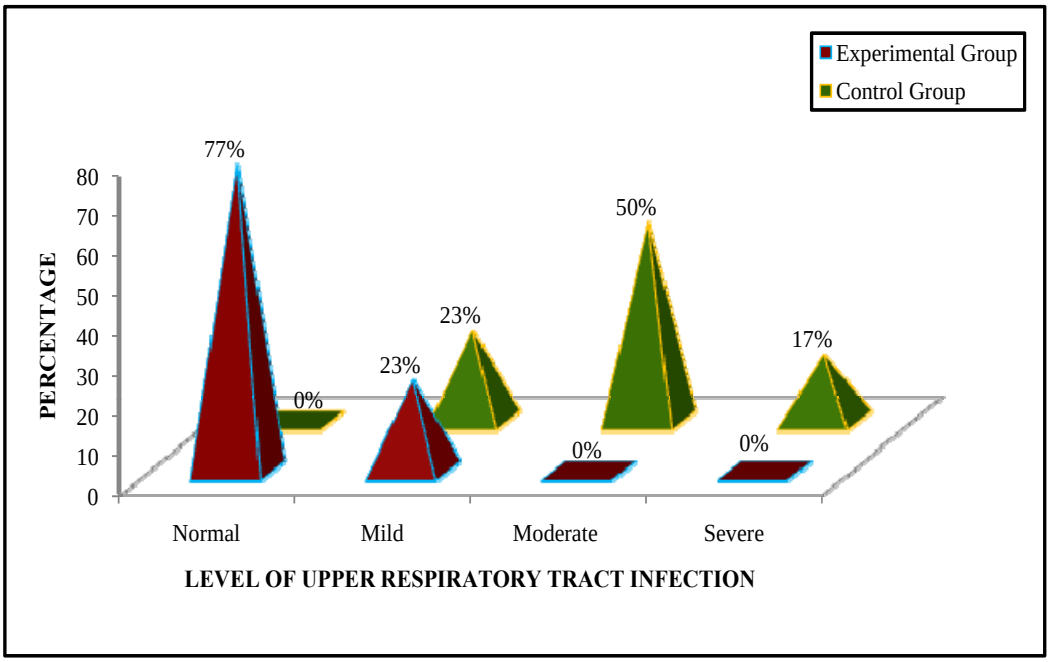

Fig-9: Percentage distribution of post test level of upper respiratory tract infection among experimental and control group.

SECTION-C

COMPARISON OF LEVEL OF UPPER RESPIRATORY TRACT INFECTION BETWEEN EXPERIMENTAL GROUP AND CONTROL GROUP

Table-4: Comparison of Posttest Level of Upper Respiratory Tract Infection Between Experimental and Control Group (N=60)

S.No	Groups	Mean	S.D	't' value
1.	Experimental group	0.78	0.13	52.5 S
2	Control group	1.83	0.14	

S- Significant

Table: 4 reveals the comparison of post test level of upper respiratory tract infection between experimental and control group.

With regard to experimental group the post test mean value was 0.78 with standard deviation of 0.13. In control group the mean value was 1.83 with standard deviation of 0.14. The calculated 't' value was 52.5 indicating that there was significant difference in the post test level of upper respiratory tract infection between experimental and control group at $p<0.05$ level.

The hypothesis H_1 states that "The mean post test severity of upper respiratory tract infection in experimental group will be significantly lower than the mean post test severity of upper respiratory tract infection in control group" was accepted based on the above analysis.

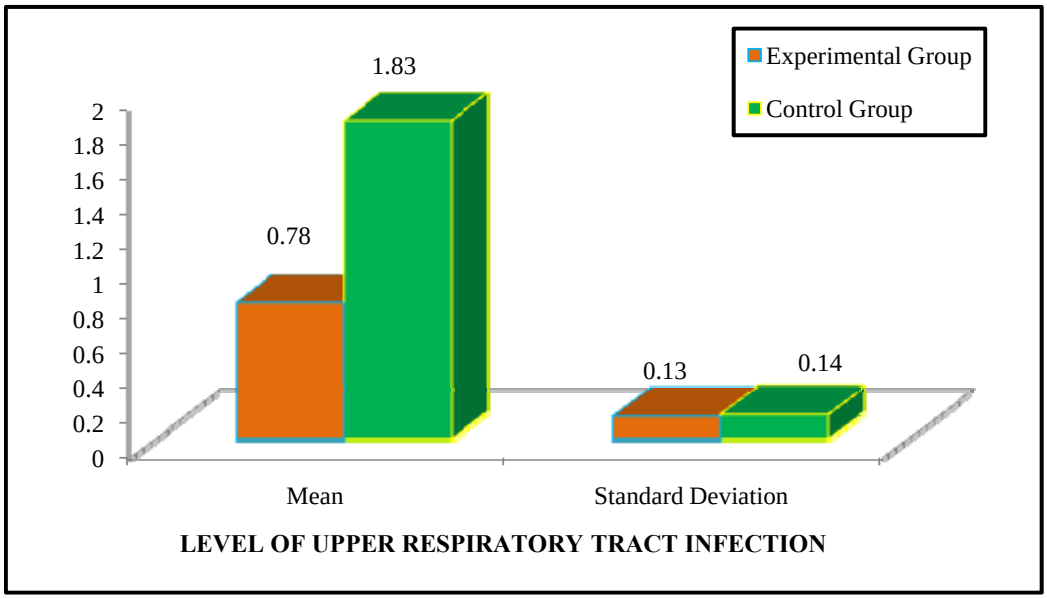

Fig -10: Comparison of post test level of upper respiratory tract infection between experimental and control group.

Table 5: Comparison of pre and post test level of upper respiratory tract infection among control group.

(N=30)

S. No	Control Group	Mean	S.D	M.D	't' value
1	Pre test	1.33	0.33	0.53	4.6
2	Post test	2.2	0.09		NS

NS- Not significant

Table: 5 shows the comparison of pre and post test level of upper respiratory tract infection among control group.

The pre test mean value was 1.33 with standard deviation of 0.33. The post test mean value was 2.2 with standard deviation of 0.09. The mean difference is 0.53. The calculated't' value was 4.6 indicating that there was no significant difference in pre and post test level of upper respiratory tract infection among control group.

The hypothesis H_2 states that "There will be significant difference between the mean pretest and post test severity of upper respiratory tract infection among children in control group" was rejected based on the above analysis.

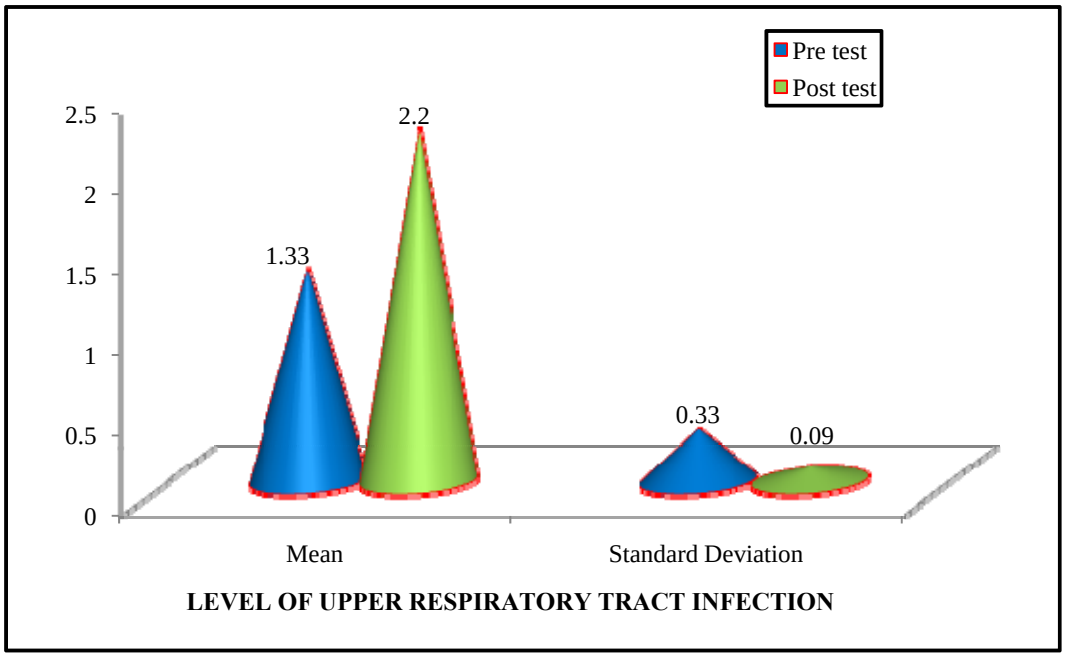

Fig - 11. Comparison of pre and post test level of upper respiratory tract infection among control group.

Table 6: Comparison of the pre and post test level of upper respiratory tract infection among experimental group

(N=30)

S. No	Experimental Group	Mean	S.D	M.D	't' value
1	Pre test	1.43	0.09	1.2	9.96 S
2	Post test	0.78	0.13		

S- Significant

Table: 6 reveals the comparison of pre and post test level of upper respiratory tract infection among experimental group.

The pre test mean value was 1.43 with standard deviation of 0.09. The post test mean value was 0.78 with standard deviation of 0.13. The mean difference is 1.2. The calculated 't' value was 9.96 indicating that there was significant difference between pre and post test level of upper respiratory tract infection among experimental group at $p<0.05$ level.

The hypothesis H_3 state that "There will be significant difference between the mean pre test and post test severity of upper respiratory tract infection among children in experimental group" was accepted based on the above analysis.

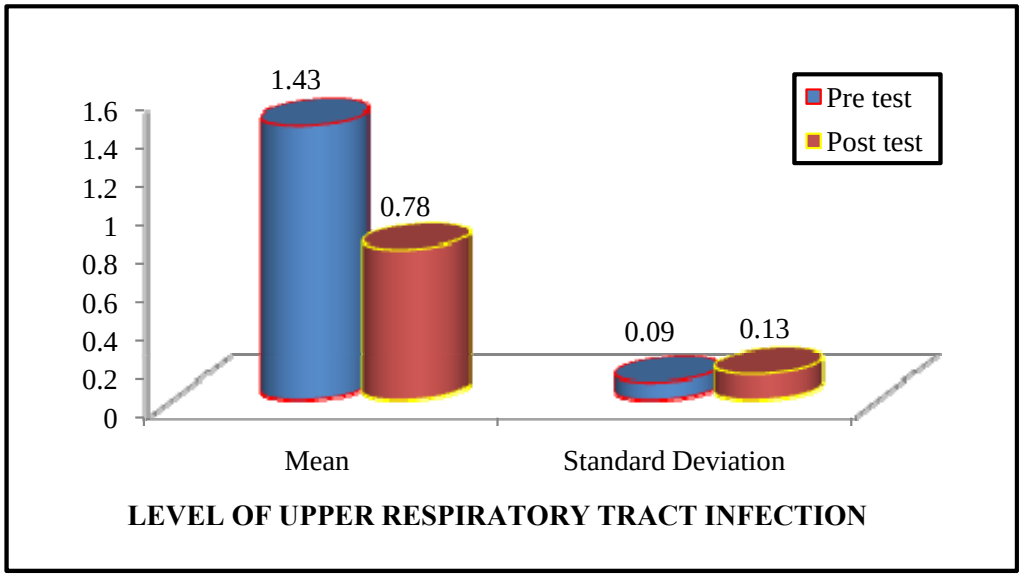

Fig - 12. Comparison of the pre and post test level of upper respiratory tract infection among the experimental group.

SECTION-D

ASSOCIATION OF UPPER RESPIRATORY TRACT INFECTION AMONG EXPERIMENTAL AND CONTROL GROUP WITH THEIR SELECTED DEMOGRAPHIC VARIABLES

Table-7: Association of Posttest Level of Upper Respiratory Tract Infection among Control Group with Selected Demographic Variables (N=30)

S. No	Demographic Variables	No	Normal		Mild		Moderate		Severe		χ^2 Value
			f	%	f	%	f	%	f	%	
1.	**Age**										
	2-3years	4	0	0	1	25	2	50	1	25	7.65 df=6 NS
	3-4years	18	0	0	7	38.9	9	50	2	11.1	
	4-5years	8	0	0	2	25	4	50	2	25	
2.	**Sex**										
	Male	13	0	0	6	46.2	6	46.2	1	7.6	2.13 df=3 NS
	Female	17	0	0	4	23.5	9	52.9	4	23.5	
3.	**Socioeconomic Status**										
	<5000	2	0	0	1	50	1	50	0	0	4.31 df=6 NS
	5001-10000	21	0	0	7	33.3	11	52.3	3	14.2	
	>10001	7	0	0	2	28.5	3	42.8	2	28.5	
4.	**Type of Family**										
	Joint	5	0	0	2	40	3	60	0	0	2.34 df=3 NS
	Nuclear	25	0	0	8	32	12	48	5	20	
5.	**Medicine for URTI**										
	Yes	0	0	0	0	0	0	0	0	0	0.1 df=3 NS
	No	30	0	0	10	33.3	15	50	5	16.7	

NS- Not significant

Table 7 shows that the chi- square was used to find out the association of post test level of upper respiratory tract infection among control group with selected demographic variables.

These study result shows that there was no association between the control group with the demographic variables like age, sex, socioeconomic status, type of family, and medicine for upper respiratory tract infection at $p>0.05$ level.

Table-8: Association of Posttest Level of Upper Respiratory Tract Infection Among Experimental Group with Selected Demographic Variables (N=30)

S. No	Demographic Variables	No	Normal		Mild		Moderate		Severe		χ^2 Value
			f	%	f	%	f	%	f	%	
1.	**Age**										
	2-3years	3	2	66.7	1	33.3	0	0	0	0	1.43 df=6 NS
	3-4years	18	15	83.3	3	0.17	0	0	0	0	
	4-5years	9	6	66.7	3	33.3	0	0	0	0	
2.	**Sex**										
	Male	12	8	66.7	4	33.3	0	0	0	0	1.22 df=3 NS
	Female	18	15	83.3	3	0.17	0	0	0	0	
3.	**Socioeconomic Status**										
	<5000	7	4	57.1	3	42.9	0	0	0	0	5.49 df=6 NS
	5001-10000	15	13	86.7	2	13.3	0	0	0	0	
	>10001	8	6	75	2	25	0	0	0	0	
4.	**Type of Family**										
	Joint	6	3	50	3	50	0	0	0	0	2.916 df=3 NS
	Nuclear	24	13	54.2	4	16.7	0	0	0	0	
5.	**Medicine for URTI**										
	Yes	0	0	0	0	0	0	0	0	0	0.04 df=3 NS
	No	30	23	76.7	7	23.3	0	0	0	0	

NS- Not significant

Table 8 shows that the chi- square was used to find out the association of post test level of upper respiratory tract infection among experimental group with selected demographic variables.

The study result shows that there was no association between the experimental group with the demographic variables like age, sex, socio economic status, type of family, and medicine for upper respiratory tract infection at $p>0.05$ level.

The hypothesis H_4 stated that “There will be significant association between post test severity of upper respiratory tract infection among children in experimental and control group with their selected demographic variables” was rejected based on the above analysis.

CHAPTER – 5

DISCUSSION

This chapter deals with the result of the data analysis to evaluate the effectiveness of honey in reducing upper respiratory tract infection among the children under the age group of two to five years. The discussion is based on the objectives of the study and the hypothesis specified in the study.

MAJOR FINDINGS OF THE STUDY

- With regard to age 60% of the children in both experimental and control group were under the age group of 3 to 4 years.
- With regard to sex in control group 43.33% of the children were males and 56.67% of the children were females. In experimental group 40% were males and 60% were females.
- Majority of the children in experimental group (50%) and in control group (70%) were in the socio economic status of Rs.5001 to 10000 per month.
- With regard to the pretest level of upper respiratory tract infection, majority of the children in the control group (66.67%) and in the experimental group (56.67%) had mild infection, where as 23.33% in control group and 43.33% in experimental group had moderate infection.
- With regard to the posttest level of upper respiratory tract infection majority of the subjects in the experimental group 76.67% were normal, 23.33% of subjects were having mild infection.
- With regard to the control group the pre test mean value was 1.33 with standard deviation of 0.88. The post test mean value was 2.2 with standard deviation of 0.09. The mean difference is 0.52. The calculated‘t’ value was 4.6.

- With regard to experimental group the pre test mean value was 1.43 with standard deviation of 0.09. The post test mean value was 0.78 with standard deviation of 0.13. The mean difference is 1.2. The calculated‘t’ value was 9.96.
- With regard to comparison of experimental and control group the post test mean value was 0.78 in experimental group and the mean post test value was 1.83 in control group. The calculated‘t’ value was 52.5.
- With respect to association there was no significant association between the demographic variables and the mean post test reduction of upper respiratory tract infection in control group and experimental group.

With respect to demographic characteristics of the sample in the experimental group, majority of the children 18(60%) were under the age group of 3 to 4 years, 9 (30%) were under the age group of 4 to5 years and the remaining 3(10%) were under the age group of 2 to 3 years. Majority of the children 18 (60%) were females and the remaining 12 (40%) were males. Majority of the children 15 (50%) were in the socio economic status between 5001 to 10000, 8(26.67%) children were in the group of >10001and 7 (23.33) were in the group of <5000. Majority of the children 24 (80%) were in nuclear family and the remaining 6(20%) were in joint family. All the children 30 (100%) were not taking any medications for upper respiratory tract infection.

In the control group, majority of the children 18(60%) were under the age group of 3 to 4 years, 8 (26.67%) were under the age group of 4 to5 years and the remaining 4(13.33%) were under the age group of 2 to 3 years. Majority of the children 17 (56.67%) were females and the remaining 13 (43.33%) were males.

Majority of the children 21 (70%) were in the socio economic status between 5001to10000, 7(23.33%) children were in the group of >10001 and 2(6.67%) were in the group of <5000. Majority of the children 25 (83.33%) were in nuclear family and the remaining 5(16.67%) were in nuclear family. All the children 30 (100%) were not taking any medications for upper respiratory tract infection.

The first objective was to assess the pretest level of upper respiratory tract infection among experimental and control group.

With regard to pre test level of upper respiratory tract infection in control group, none of the child was normal, 20 (66.67%) of samples were having mild infection, 10 (33.33%) of the samples were having moderate infection, none of the child have severe infection. In the pre test level of experimental group, none of the child was normal, 17 (56.67%) of the samples were having mild infection, 13 (43.33%) of the samples were having moderate infection, none of the child have severe infection.

The second objective was to find out the effectiveness of honey in reducing upper respiratory tract infection among children in experimental group and control group.

The study result shows that there was significant reduction of upper respiratory tract infection after oral administration of honey in the experimental group.

With regard to post test level of upper respiratory tract infection in the control group, none of the child was normal, 13 (23.33%) of the samples were having mild infection, 15 (50%) of the samples were having moderate infection, 5(16.67%) of the samples were having severe infection. In the post test of experimental group

23(76.67%) of the subjects were normal, 7 (23.33%) of the subjects were having mild infection, none of the subject was having moderate and severe infection.

With regard to experimental group the post test mean value was 0.78 with standard deviation of 0.13. In control group the mean value was 1.83 with standard deviation of 0.14. The calculated 't' value was 52.5 indicating that there was significant difference in the post test level of upper respiratory tract infection between experimental and control group at $p<0.05$ level.

From the above analysis and interpretations, the hypothesis H_1 state that "The mean post test severity of upper respiratory tract infection in experimental group will be significantly lower than the mean post test severity of upper respiratory tract infection in control group" was accepted

The above result was supported by **Kalus. U et al., (2010),** conducted a study to compare the effect of honey with green tea on 300 children with upper respiratory tract infection. This study observed a total of 300 pre school children treated with honey (10 ml twice daily) for three days with treatment with an extract of green tea (10 ml two times a day) for three days. The score of subjective symptoms decreased over the course of treatment with honey, where as treatment with green tea resulted in a less significant reduction of symptoms. Honey therefore proved to be an effective adjuvant for the treatment of upper respiratory tract infection.

The third objective was to compare the pretest and post test level of upper respiratory tract infection in control group.

The pre test mean value was 1.33 with standard deviation of 0.33. The post test mean value was 2.2 with standard deviation of 0.09. The mean difference is 0.53.

The calculated‘t’ value was 4.6 indicating that there was no significant difference in pre and post test level of upper respiratory tract infection among control group.

The hypothesis H_2 states that “There will be significant difference between the mean pre test and post test severity of upper respiratory tract infection among children in control group.” was rejected based on the above analysis.

The fourth objective was to compare the pretest and post test level of upper respiratory tract infection in experimental group.

The pre test mean value was 1.43 with standard deviation of 0.09. The post test mean value was 0.78 with standard deviation of 0.13. The mean difference is 1.2. The calculated ‘t’ value was 9.96 indicating that there was significant difference in pre and post test level of upper respiratory tract infection among experimental group at $p<0.05$ level.

From the above analysis and interpretations, the hypothesis H_3 state that “There will be significant difference between the mean pretest and post test severity of upper respiratory tract infection among children in experimental group” was accepted.

The above result was supported by **Dr. Ian Paul (2007),** conducted a study to compare the effects of a single nocturnal dose of honey or honey flavored dextromethorphan with no treatment on nocturnal cough and sleep difficulty associated with childhood upper respiratory tract infections at a single out patient general pediatric practice. One hundred and five children aged 2 to 18 years were selected with upper respiratory tract infection, nocturnal symptoms and illness duration of seven days or less. A single dose of honey, honey flavored dextromethorphan, or no treatment 30

minutes prior to bed time. Main outcome measures cough frequency; cough severity, bothersome nature of cough, and child and parent sleep quality. Significant differences in symptom improvement were detected between treatment groups, with honey consistently scoring the best. In paired comparisons, honey was significantly superior to no treatment for cough frequency and the combined score, but dextromethorphan was not better than no treatment for any outcome. Honey may be a preferable treatment for the cough and sleep difficulty associated with childhood upper respiratory tract infection.

The fifth objective was to associate the post test level of upper respiratory tract infection between experimental and control group with their selected demographic variables.

The study findings showed that in the control group there was no association between the post test reduction of upper respiratory tract infection with the demographic variables like age, sex, socioeconomic status, and type of family, at $p>0.05$ level.

The study findings in the experimental group shows that there was no association between the post test reduction of upper respiratory tract infection with the demographic variables like age, sex, socio economic status, and type of family, at $p>0.05$ level.

From the above analysis and interpretations, the hypothesis H_4 state that "There will be significant association between post test severity of upper respiratory tract infection among children in experimental and control group with their selected demographic variables" was rejected.

The above acceptance of H_1 and H_3 was attributed to the effectiveness of honey in reducing upper respiratory tract infection among children under the age group of two to five years of age

CHAPTER – VI

SUMMARY, CONCLUSION, IMPLICATIONS, LIMITATIONS AND RECOMMENDATIONS

This chapter deals with summary, conclusion, implications, limitations and recommendations which creates a base for evidence based practice.

SUMMARY

Upper Respiratory Tract Infections (URI or URTI) are the illnesses caused by an acute infection which involves the upper respiratory tract: nose, sinuses, pharynx or larynx. This commonly includes: tonsillitis, pharyngitis, laryngitis, sinusitis, otitis media, and the common cold **(Jean-Baptiste de Panafieu P, 2007)**.

Upper respiratory tract infections are the most frequent infectious disease in humans with the average adult contracting two to four infections a year and the average child contracting between six to twelve infections a year. For children less than five years of age the reported incidence of upper respiratory infections was 24%.

The incidence of the common cold varies by age. Rates are highest in children younger than five years. Children who attend school or daycare are a large reservoir for URIs, and they transfer infection to those who care for them. Children have about three to eight viral respiratory illnesses per year. Adolescents and adults have approximately two to four colds a year, and people older than 60 years have less than one cold per year.

In India, upper respiratory tract infection is one of the major reasons for which children are brought to the hospitals and health facilities. About 13 percent of in patient death in pediatric wards is due to upper respiratory tract infection. The

proportion of death due to upper respiratory tract infection in the community is much higher as many children die at home. Most children have three to five attacks of upper respiratory tract infection in a year. The incidence is highest in young children especially below five years of age and decreases with the increasing age.

Honey is a popular home remedy for cough and colds in many cultures. A new study in the archives of pediatrics and adolescent medicine provides the first evidence showing that honey may help to calm children's cough and help them sleep better. The researchers say that mechanism of honey may work by coating and soothing an irritated throat and it is believed to have antioxidant and antibacterial effects.

The aim of the study was to assess the effectiveness of honey in reducing upper respiratory tract infection among children under the age group of two to five years.

The methodology of the study was true experimental research. The setting was Kurumbanai village at Kanyakumari District. The sample size was 60 children, in which 30 children in experimental group and 30 children in control group.

The Objectives of the Study were:

- To assess the pre test level of upper respiratory tract infection among experimental and control group
- To find out the effectiveness of honey in reducing upper respiratory tract infection among children in experimental and control group.
- To compare the pre test and post test level of upper respiratory tract infection in control group.

- To compare the pre test and post test level of upper respiratory tract infection in experimental group.
- To associate the post test level of upper respiratory tract infection between experimental and control group with their selected demographic variables.

The Research Hypotheses Formulated were:

H_1 The mean post test severity of upper respiratory tract infection in experimental group was significantly lower than the mean post test severity of upper respiratory tract infection in control group.

H_2 There was significant difference between the mean pre test and post test severity of upper respiratory tract infection among children in control group.

H_3 There was significant difference between the mean pre test and post test severity of upper respiratory tract infection among children in experimental group.

H_4 There was significant association between post test severity of upper respiratory tract infection among children in experimental and control group with their selected demographic variables.

The Assumptions of the Study were:

❖ Upper respiratory tract infection is a common and distressing problem during childhood.

❖ Honey may reduce upper respiratory infection.

❖ The demographic variables will have significant association with the effect of honey in reducing upper respiratory tract infection

The review of literature related studies which provides a strong foundation for the study

It includes,

Section-A: Studies related to prevalence of upper respiratory tract infection in children.

Section-B: Studies related to honey in management of upper respiratory tract infection in children.

Section-C: Studies related to using honey in other conditions.

The conceptual frame work of this study was based on modified Wiedenbach's Helping Art of Clinical Nursing Theory and it provided a complete frame work for achieving the central purpose of the study.

The research design was true experimental pre test post test control group design.

Researcher selected the children under the age group of two to five years, by using simple random sampling technique.

The content validity of the tool was established by five experts from the child health department.

Pilot study was conducted in Alanchi village at kanyakumari district and the findings revealed that the tool was feasible, reliable and practicable to proceed with the main study.

The main study was conducted in Kurumbanai village at Kanyakumari district.

Samples of 60 children under the age group of two to five years of age were selected by simple random sampling technique. The collected data was analysed and interpreted based on objective using descriptive and inferential statistics.

The result of the study revealed that there was a significant difference on the post test reduction of upper respiratory tract infection between experimental and control group which shows that honey is a best home remedy for the treatment of upper respiratory tract infection and it is cheap, safe and traditionally acceptable. There was no significant association between the post test reduction of upper respiratory tract infection in experimental and control group with demographic variables like age, sex, socio- economic status and type of family.

CONCLUSION

This study assessed the effectiveness of honey in reducing upper respiratory tract infection among the children under the age group of two to five years. The study revealed that there was a significant difference in the level of upper respiratory tract infection after the oral administration of honey in the experimental group whereas there was no significant difference in the control group. On the basis of this study the researcher concluded that oral administration of honey has significant effect on upper respiratory tract infection. Honey is a natural product which is cheap, safe, and easily available. Hence honey can be used for children who are suffering from upper respiratory tract infection.

IMPLICATIONS

Investigator has derived from the study that the following implications are of vital concern in the field of nursing practice, nursing education, nursing administration and nursing research.

Nursing Practice

1. The nurses have a vital role in providing safe and effective nursing care to reduce the upper respiratory tract infection among the children.
2. Having an in-depth knowledge on the pathological changes in upper respiratory tract infection and the medicinal uses of honey helps the nursing personal to practice oral administration of honey for treating upper respiratory tract infection.
3. Oral administration of honey can be practiced by the nurses in day to day activities to reduce upper respiratory tract infection.
4. The nurses should develop skills in providing efficient nursing care for children with upper respiratory tract infection using natural remedies which is cost effective.
5. Nursing practice in the community should focus on prevention of upper respiratory tract infection and promotion of health status among children.
6. Nurses need to practice evidence based approach while giving care to the children with upper respiratory tract infection.

Nursing Education

1. Educate the students about various complementary and alternative therapies for upper respiratory tract infection.
2. Encourage the students for effective utilization of evidence based practice.
3. The nurse educators need to be equipped with adequate knowledge regarding the use of honey for upper respiratory tract infection in children
4. The students should be provided with adequate exposure in relation to practice of complementary and alternative therapy.

5. Conduct workshops or conferences for students regarding the use of honey for upper respiratory tract infection in day to day nursing practice.

Nursing Administration

1. Collaborate with the governing bodies as well as the hospital administration to formulate standard protocols and policy to emphasize nursing care.
2. Nursing administration ensures that the implementation of nursing intervention which is research based and clinically effective in promoting the health and to introduce evidence based practice based on the research finding.
3. The nursing administrators should concentrate on periodical conduction of refresher courses to update the knowledge of nurses and in-service education in non-pharmacological management of upper respiratory tract infection

Nursing Research

1. The nurse researcher should disseminate the findings of the studies through conferences, seminar, and publishing in professional journals to the pediatric staff.
2. As there is a limited study on this area, nursing researcher should encourage and conduct further researchers related to honey for upper respiratory tract infection.
3. The findings of the research study will help in building and strengthening the body of knowledge
4. Evidenced based nursing practice should be encouraged in order to increase the knowledge about non-pharmacological interventions in upper respiratory tract infections among children.

LIMITATIONS

During the period of study the limitations faced by the investigator were as follows,

1. The investigator had difficulty in collecting study material for review from the Indian context
2. The sample size was too small. Hence the generalization must be done with caution.

RECOMMENDATIONS

Based on the findings of the present study the following recommendations are made:

1. Similar study can be repeated on a large sample.
2. A comparative study can be conducted by using honey and other non-pharmacological interventions in reducing upper respiratory tract infection.
3. A study can be conducted to assess the effectiveness of honey in mucolitis, gingivitis, wound healing and plague.
4. A further study can be conducted to assess the knowledge, attitude and practice of complementary and alternative therapies among nursing personnel.

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APPENDIX – A

LETTER SEEKING PERMISSION FOR CONDUCTING THE STUDY

SRI K. RAMACHANDRAN NAIDU
COLLEGE OF NURSING

Approved by Govt. of Tamilnadu and Indian Nursing Council / T.N.C
Affiliated to the Tamilnadu Dr. M.G.R. Medical University

K.R. Naidu Nagar - 627 753, Paruvakudi Village, Post Bag No.1, Karivalam (via)
Sankarankovil (Tk), Tirunelveli (Dt), Ph. : 04636 - 260950, Fax : 04636 - 260377. E - Mail : srikrncon@yahoo.com

31.3.2011

To

The Executive Officer
Palapallam Town Panchayat,
Palapallam (Po),
Kanyakumari District.

Mrs. Darbi .D.R is a bonafide student of our college studying in M.Sc (N) programme. As a partial fulfillment of the university requirement for the award of M.Sc (N) degree, She needs to conduct research project.

Her chosen research project is as follows **"A study to assess the effectiveness of honey on reduction of upper respiratory tract infection among children under the age group of 2 to 5 years in Kurumpanai Village at Kanyakumari District, April 2011"**.

Permission may kindly be granted to her for conduction of the study at your village. Further details of the proposal project will be furnished by the student personally, Confidentiality will be ensured in the research project.

Thanking you

Yours faithfully

Permitted

Executive Officer
PALAPPALLAM TOWN PANCHAYAT
PALAPPALLAM - 629 159,
KANYAKUMARI DIST.

Principal 15/4/11
Sri K. Ramachandran Naidu
College of Nursing
K.R. Naidu Nagar - 627 753. Karivalam (Via)
Sankarankovil (T.K.) Tirunelveli Dt.,

APPENDIX – B

LETTER SEEKING EXPERTS OPINION FOR CONTENT VALIDITY

From

Mrs.Darbi.D.R.
M.Sc. (N) I year,
Sri.K.Ramachandran Naidu College Of Nursing,
Sankarankovil, Tirunelveli District.

To

Sub: Requisition for expert opinion on suggestion for content validity of the tool.

Respected Sir/ Madam,

I am M.Sc.Nursing student of Sri. K. Ramachandran Naidu College of Nursing, Sankarankovil. As a part of my course, I am doing the study on the topic mentioned below.

"A true experimental study to assess the effectiveness of honey in reducing upper respiratory tract infection among children under the age group of two to five years in Kurumbanai village at Kanyakumari District."

The research project is to be submitted to The Tamilnadu Dr.M.G.R. Medical University as a partial fulfillment for the requirement of M.Sc. (N) programme.

I request you to kindly evaluate the tool item and give your valuable opinion and suggestion for improvement of the tool.

I would be highly obliged and thankful to hear from you.

Thanking you in anticipation.

Yours sincerely,

(DARBI D.R.)

Enclosures:

- Statement of the problem.
- Research tool.
- Scoring key.

APPEXDIX – C

LIST OF EXPERTS FOR CONTENT VALIDITY

1. **Mrs.Judi.,M.Sc.(N)., Ph.D.,**
   Principal,
   Vel.R.S.College Of Nursing,
   Vellanoor, Avadi,
   Chennai.

2. **Ms. Kalai Kuru Selvi., M.Sc.(N)., Ph.D.,**
   HOD of pediatric department,
   Matha College Of Nursing,
   Manamadurai,
   Sivagangai District.

3. **Mrs. Malchijah., M.Sc. (N).,**
   HOD of pediatric nursing,
   Christian College Of Nursing,
   Neyyoor,
   Kanyakumari District.

4. **Mrs.Reena Evency., M.Sc. (N)., Ph.D.,**
   Principal,
   St. Xavier's Catholic College of Nursing,
   Chungankadai,
   Kanyakumari District.

5. **Mrs. Violine Sheeba., M.Sc. (N).,**
   Principal,
   Thasiah College Of Nursing,
   Marthandam,
   Kanyakumari District.

6. **Dr. D. EDWARDS RUBAN.,M.B.B.S., D.C.H.,**
   Consultant pediatrician
   Aaron Hospital, Karungal
   Kanyakumari District

APPENDIX-D

CERTIFICATE OF ENGLISH EDITING

TO WHOMSO EVER IT MAY CONCERN

This is to certify that **Mrs. Darbi.D.R,** II year. M. Sc.Nursing student of Sri. K. Ramachandran Naidu College of Nursing, Sankarankovil (Tk), Tirunelveli, has done a dissertation study on "A true experimental study to assess the effectiveness of honey in reducing upper respiratory tract infection among children under the age group of two to five years in Kurumbanai village at Kanyakumari District." This study was edited for English language appropriateness.

Signature

(Prof. Mrs. Lekshmi Devi. S. M.A., M.Ed., M.Phil., Ph.D)

APPENDIX – E

INFORMED CONSENT

Good Morning,

I am **Mrs.Darbi.D.R.,** M.Sc. Nursing student of Sri. K. Ramachandran Naidu College of Nursing, conducting a study "to assess the effectiveness of honey in reducing upper respiratory tract infection among children under the age group of two to five years" as a partial fulfillment of the requirement for the degree of M.Sc. Nursing under The TamilNadu Dr. M.G.R Medical University. The children will be given 10 ml of honey morning and evening and the effectiveness will be assessed using an observational checklist.

I assure you that the information obtained will be kept confidential. So I request you to kindly co-operate with me and participate in this study by giving your frank and voluntary consent.

Thank you.

Signature of Mother's of Children

APPENDIX - F

COPY OF THE TOOL FOR DATA COLLECTION

SECTION – A

Demographic data:

1. Age of the child

   (a) 2-3 years (b) 3-4 years (c) 4-5 years

2. Sex of the child

   (a) Male (b) Female

3. Socio-economic status

   (a) < 5000 (b) 5001-10,000 (c) > 10001

4. Type of family

   (a) Joint family (b) Nuclear family

5. Is the baby on any medications for URTI?

   (a) Yes (b) No

SECTION: B

Observational Checklist for assessing upper respiratory tract infection:

S.No	CRITERIA	NORMAL 0	MILD 1	MODERATE 2	SEVERE 3
1.	Respiratory rate	20-30/mt	30-35/mt	35-40/mt	>40/mt
2.	Eyes	Normal	Itchy and watery	Reddened and watery	Severely congested
3.	Nasal block	No block	Swollen mucosa	Unilateral block	Complete block
4.	Nasal Discharge	No discharge	Watery	Mucoid	Purulent

5.	Breathing pattern	Normal	Mouth breathing	Shallow respiration	Use of accessory muscles
6.	Tonsils	Normal	Enlarged	Erythematous	Exudates present
7.	Speech	Normal	Nasal	Muffled	Hoarse
8.	Activity	Normal	Looks tired	Refusal to play	Listlessness
9.	Respiratory sounds	Normal	Unequal	Stridor	Wheeze
10.	Face	Normal	Dull	Flushed	Edematous
11.	Cough	No cough	Non-Productive	Productive	Persistent
12.	Feeding	Normal	Lack of interest in feeds	Refusal of feeds	Vomiting
13.	Sleep	Normal	Snores at sleep	Interrupted sleep	Inability to sleep
14.	Cry	No cry	Irritable	Occasional cry	Excessive cry
15.	Mouth	Normal	Dry	Offensive odour	Inflammation of oral mucosa

APPENDIX – G

SCORING KEY

Score	Interpretation
0	Normal
1-15	Mild
16- 30	Moderate
31- 45	Severe

APPENDIX – H

INTERVENTION

The procedure was on the first day the investigator done the pre test using the observational checklist and assessed the level of upper respiratory tract infection in experimental and control group. Ten milliliter of honey was administered orally twice daily for three days to the experimental group. No intervention was given to the control group. On the fourth day the post test level of upper respiratory tract infection was assessed using the observational checklist in experimental and control group.